TSUNAMI RUMORS AND MYTHS • PSYCHIC DETECTIVES • VOODOO SCIENCE IN FLORIDA

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON
Volume 29, No. 4 • July / August 2005

Carl Sagan

Questions and Answers from His 1994 Keynote Address

Ann Druyan: The Great Turning Away

JAMES RANDI
Fakers and Innocents: The $1 Million Challenge

The Curious Problem of Fritjof Capra

Debating the Skeptic Label

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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More From His 'Wonder and Skepticism' CSICOP 1994 Keynote

When the late Carl Sagan delivered his keynote address "Wonder and Skepticism" before a large audience at the CSICOP Conference in Seattle in 1994, a lively question-and-answer session followed. We published Sagan's adaption of his talk in the January/February 1995 SKEPTICAL INQUIRER. *The Q/A session had been transcribed at the time along with the talk but put away and never published. It was recently relocated, and Ann Druyan, Sagan's wife and collaborator, agreed that we should publish it.*

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EDITOR'S NOTE

Time for Science to Go on the Offense

We have seen another turbulent several months in science's latest battles with the evolution-denyers. For too long the creationist/intelligent design movements have been implementing well-crafted political strategies. Now there is some evidence the scientific communities are capable of mounting some strategies of their own. But more needs done.

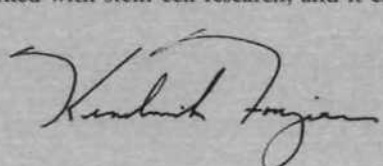
I write shortly after conclusion of two days of acrimonious hearings by the Kansas State Board of Education. Mainstream scientists boycotted the hearings, and the strategy may have worked. By all accounts the attorney defending evolution, Pedro Irigonegaray, was a highly effective "Darwin's bulldog," repeatedly blasting critics of evolution and portraying the hearings as the "gigantic waste of money and an insult to Kansas teachers" that they were. The idiocy of it all was reported by the international media, and the *New York Times* followed with a May 17 editorial calling the ID proposals "wildly inappropriate" and noting how the critics of evolution continually "evolve into a new form, armed with arguments that sound progressively more benign, while remaining as dangerous as ever."

Scientists and the progressive public may have finally awakened to the threat the creationist ID movement poses to science education.

National Academy of Sciences President Bruce Alberts wrote this spring to all Academy members—the nation's most distinguished scientists, but many of them ivory tower types—alerting them to the dangers and urging them to present the scientific viewpoint of view in their local regions. The Academy has previously published three excellent booklets for science teachers and the public about evolution and creationism, but this was the first such direct appeal to academy members to become active. And Alberts emphasized that the threat is not just to biology but to the physical sciences also. Then on May 18 the American Institute of Physics Teachers issued a statement distributed by the American Institute of Physics on the teaching of evolution and cosmology. It called the subjects two of the unifying concepts of modern science and lamented efforts to dilute their teaching. (Earlier pro-evolution statements by virtually every scientific organization in the country are collected in the National Center for Science Education's *Voices of Evolution* booklet.)

Such statements are welcome and useful but not sufficient. Advocates of science are correct to repeatedly emphasize that there is no *scientific* controversy about either the validity or the centrality of evolution. The battle, however, is being fought not in the scientific arena but in the public arena. The ID movement has until now been far more effective than scientists in grassroots political action, and so the scientists need help.

I was struck by a recent proposal by our colleague Matthew Nisbet, an assistant professor of journalism and communication at Ohio State University, toward the end of his March 1 csicop.org online column "Polling Opinion About Evolution." He proposes that to counter the ID movement the scientific community "needs to address the issue head on with a major advertising and media campaign." Simple, well-crafted, widely distributed messages should highlight evolution's strength, usefulness, and acceptance and ID's intellectual vacuity. The tactic has worked with stem-cell research, and it can work for evolution too.



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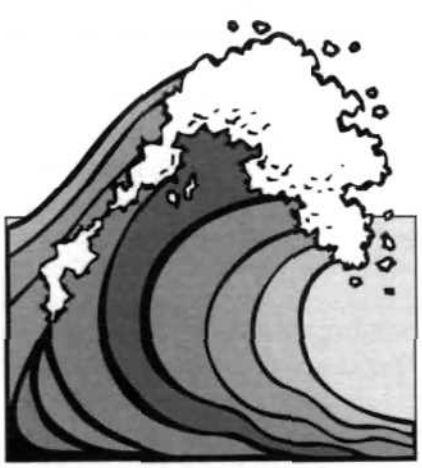
Tsunami Rumors Cause Ongoing Waves of Fear

ROBERT E. BARTHOLOMEW and
DIEGO ZÚÑIGA

Months after the receding waters from the devastating tsunami of December 26, 2004, rumors of more killer waves continue to disrupt lives. As far away as Chile, which was spared the tsunami, rumors have sent people scurrying to the hills.

Just five days after the event, tsunami rumors in the northern Malaysian state of Kedah sent residents rushing to higher ground. A similar panic occurred to the south on the resort island of Penang. Rumors often spread across the country by phone text messages. Snopes.com, an Internet site documenting cyber-rumors and urban legends, noted a flurry of tsunami-related stories of dubious origin—including reports that tsunami orphans were being sold in Malaysia. The Deputy Inspector General of the Malaysian Police, Musa Hassan, said the claims were baseless.

Journalist Robert Marquand in Galle, Sri Lanka, reported that rumors were rampant in the uncertainty and fear following the tsunami. In scores of coastal villages, rumors were creating social instability. Soon after the disaster, a popular Sri Lankan astrologer appeared on national television to predict a second tsunami between January 3 and 8, 2005. His presentation was convincing, betting his own life in guaranteeing the event, which never materialized. To make matters worse, senior members of the Sri Lankan government publicly supported the prediction, one official going so far as to claim that "astrology is a sub-branch of the sciences."



Shortly before midnight on January 16, tsunami rumors spread like wildfire through the city of Talcahuano in southern Chile. Most of the 250,000 able-bodied inhabitants fled for their lives. The stories spread by word of mouth, by telephone, text message, and megaphone. For those harboring doubts, the final straw was the sounding of the fire alarm. The next few hours were chaotic as news spread to other cities along Chile's long coastline. A road soon collapsed under the crushing weight of the mass exodus. By daybreak, the scare was blamed for sixty injuries and two deaths.

Rumors are unverified but plausible stories on topics of perceived importance, often possessing a "kernel of truth" but lacking substantiating evidence. In the aftermath of disasters, rumors are rife as residents seek reassurance. Rumors are like storm clouds, continuously changing to reflect the social landscape. They are the building blocks of most scares and panics.

Rumors thrive in ambiguous situations as people unconsciously construct stories to gain certainty and reduce anxiety. When there is scant interest in a topic and official information is abundant, rumors rarely sprout. Sociologist Tamotsu Shibutani described rumor as "improvised news" when the demand for certain news exceeds the supply.

During many tsunami panics, authorities sought to arrest those responsible for starting the rumor. Such attempts are usually misguided and fruitless, since rumors are rarely deliberate. After the Great Depression, an advertising agency hired actors to spread rumors about certain products in hopes of boosting sales. In one ploy, two actors boarded a commuter train, one posing as a rich businessman, the other a chauffeur. The latter—who presumably knew tires—would converse loudly with his counterpart, vigorously recommending a certain brand. More often than not the deception backfired: the story either did not spread or consumers mixed up the brands.

We cannot eradicate rumors; they are part of human culture. But in the case of tsunamis, we can plan ahead to quickly consult specific authoritative sources to determine their truth or falsity. Relying on what someone heard from a neighbor down the street is a recipe for chaos.

Robert E. Bartholomew is a sociologist and author (with Benjamin Radford) of Hoaxes, Myths, and Manias. *Diego Zúñiga is a Chilean journalist, a representative member of* Pensar *magazine, and publisher of* La Nave de los Locos, *a skeptical bulletin.*

Bigfoot Video Surfaces in Manitoba

It may be the break that Bigfoot aficionados have been waiting for. On April 16, 2004, ferry operator Bobby Clarke was crossing the Nelson River in Manitoba, Canada, when he saw a shadowy figure moving on the far shore. Using his camcorder, Clarke captured tape of the figure walking along the riverbank. According to those who have seen the tape, the two-and-a-half-minute clip shows a tall, shadowy, human-like creature that many in the small community of Norway House Cree Nation think is the legendary Bigfoot, or as Canadians know it, the sasquatch. "It's not a bear or human walking around," said John Henry, Clarke's father-in-law. "You can tell by the features," he told CBC News.

As of this writing, only a few neighbors and friends have viewed the tape. They report that the figure is about nine feet tall and fits past descriptions of the legendary monster said to roam the woods near this northern Manitoba town, located twenty-nine kilometers north of Lake Winnipeg. CBC-TV video journalist Mychaylo Prystupa viewed the tape and is unconvinced. According to a story in the *Winnipeg Free Press*, the reporter watched thirty seconds of the tape, which she says shows a "dark, shadowy figure in the distance." She said the "shaky" video would need slowing down and enhancement to be "interesting."

That may happen. Clarke sold his video clip to Fox Television's show *A Current Affair*, after considering bids from media organizations from Florida to Toronto.

In the meantime, residents of Norway House and interested Bigfoot researchers can only speculate about the tape's contents, because Clarke has stopped showing it. That hasn't impeded sasquatch fans from using the incident to bolster their long-held claims that large, hairy creatures roam the woods of Manitoba. Bill Borody, who calls his house the Manitoba Sasquatch Research Centre, told reporters there have been more than 300 sasquatch sightings in the past three decades in the area. Michelle Baril, another Bigfoot researcher, told the CBC she's confident the sighting is the real thing because she's investigated many such incidents over the years.

Several reputed films and videos of Bigfoot have surfaced over the last forty years. The best-known (and most contentious) of these was shot in Bluff Creek, California, by Roger Patterson and Bob Gimlin in 1967. It has been the subject of several SKEPTICAL INQUIRER articles, including "Bigfoot's Screen Test" (May/June 1999) and "Exposing Roger Patterson's 1967 Bigfoot Film Hoax" (July/August 2004).

To date, none of the films have been authenticated—and in fact several have been proven hoaxes. None of that seems to have affected the enthusiasm of sasquatch fans in Canada. Bill Borody told reporters that he's sure sasquatches inhabit the woods of Manitoba, whether this particular tape turns out to be authentic or not. Asked why scientists have yet to find proof of the large mammal's existence, Borody said the answer might lie in native lore that suggests the Bigfoot is a "shape-shifter," a creature capable of transforming itself into other animals. "I think this thing goes well beyond our logic," he told *Free Press* reporter Paul Turenne.

—Paul Benedetti

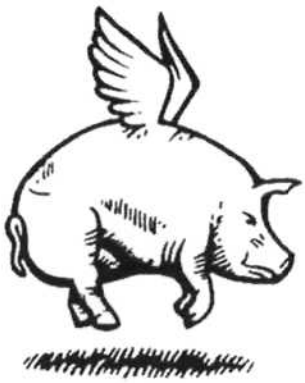
Paul Benedetti teaches journalism at the University of Western Ontario. He is the co-author of the book Spin Doctors: The Chiropractic Industry Under Investigation *(Dundurn Press, 2002).*

Randi's Pigasus Awards Go to Prayer Study, Psychic Travel, Ramtha 'Bleep' Film

James Randi announced his 2005 Pigasus Awards ("Pigs might fly") on April 1, and the lead one went to the people responsible for the bizarre and questionable Columbia University prayer study that was the subject of an exposé cover article by Bruce Flamm in the September/October 2004 SKEPTICAL INQUIRER.

As Randi's readers know (www.randi.org), he announces these awards via ESP to the winners, who are of course allowed to predict their winning of this honor by precognition. The Flying Pig trophies are sent to the winners via psychokinesis. "We send," says Randi "If they don't receive, it's perhaps due to their lack of PK ability."

This year, the prizes for 2004 performances go to these folks (the descriptions are in Randi's own words):



PIGASUS

Category 1, to the scientist who said or did the silliest thing related to the supernatural, paranormal, or occult: We vote for Dr. Rogerio Lobo, professor and former chairman of the Department of Obstetrics and Gynecology at Columbia University. He cosigned a paper titled "Does Prayer Influence the Success of in Vitro Fertilization-Embryo Transfer," published in the *Journal of Reproductive Medicine* (*JRM*). It was written by Dr. Kwang Cha, once head of Columbia's fertility center, and a lawyer, Daniel Wirth, who has no medical credentials. The paper, incredibly, concluded that women in South Korea who had received *in vitro* fertilization were twice as likely to conceive if they had been prayed for by Christians who were thousands of miles away. Dr. Lobo's endorsement was largely responsible for the paper's acceptance for publication, then he revealed that he'd actually only "reviewed and edited" the material, having been asked to sign it well after the research had already been done and evaluated. Wirth, who has a twenty-year legal record of fraud, has now been sentenced to five years in federal prison for financial improprieties unrelated to the Columbia study. Columbia has quietly withdrawn the name of Dr. Lobo as the lead scientist of the project; he will make no comments to the media. The *JRM* still supports the study, and still carries the paper in their records.

Category 2, to the funding organization that supported the most useless study of a supernatural, paranormal, or occult claim: We honor the U.S. Air Force Research Laboratory, which paid $25,000 to Eric W. Davis (Ph.D., FBIS) and a Las Vegas company called Warp Drive Metrics to study the "conveyance of persons by psychic means" and "transport through extra space dimensions or parallel universes." For their/our money, the U.S.A.F. received a seventy-eight-page report,"Teleportation Physics Study," a mass of mathematical calculations and diagrams with much dissertation on "wormholes" and "parallel universes." An annual expenditure of some $7 million on this project was recommended by the report, since Warp Drive Metrics concluded that: "We are still very far away from being able to entangle and teleport human beings and bulk inanimate objects." Really? Who knew?

Category 3, to the media outlet that reported as factual the most outrageous supernatural, paranormal, or occult claims: The prize goes to the film *What the Bleep Do We Know?*, a fantasy docudrama cult hit supposedly about the "nature of reality" [see SI, September/October 2004 and January/February 2005]. More than a dozen scientists, theologians, and mystics appear. However, the product placement reveals that among the physicists, neurologists, and academics who expound the film's thesis is New Age icon J.Z. Knight, who claims to be channeling a 35,000-year-old god/warrior from Atlantis named Ramtha. The film's producers, writers, directors, and some of the stars are members of the Ramtha School of Enlightenment in Washington State, several of the scientists are affiliated with Knight's school, and the film was largely financed by one of Knight's students. It's a blatant effort by religious, mystical, and New Age gurus such as Deepak Chopra to disguise their views as real science. Thrown in are the fantasies of Masura Emoto, who claims to have proven that thoughts can change the structure of water; his "experiments" consist of taping written words to glasses of water (see www.randi.org/jr/052303.html). The "Maharishi Effect," an equally vacuous notion, is also offered. A rampant example of abuse by charlatans and cults, it is still filling theaters all over the world.

Category 4, to the "psychic" performer who fooled the greatest number of people with the least talent: This craved category is won for 2004 by that persistently wrong psychic, prophet, seer, and visionary, Sylvia Browne. In July of 2004, Sylvia said that Osama bin Laden was dead, but we've since seen a video released three months after that mentioning Bush and Kerry, proving when it was made. Wrong. (Remember that she also predicted that Saddam Hussein would be found dead before the end of 2003. Wrong.) In October of 2003, she said that Yellowstone Park would erupt between January and March of 2004. Wrong. We could go on and on, but suffice it to say that Ms. Browne easily wins this category.

Police, Psychics Search for 'Abducted' Runaway Bride

Jennifer Wilbanks, 32, vanished from her Duluth, Georgia, home on April 26, 2005. The long-distance runner, who was to be married in less than a week, was last seen preparing to go jogging. When she disappeared she left behind her keys, wallet, and diamond engagement ring.

Wilbanks soon became the focus of a nationwide search. Various clues seemed to suggest that foul play may have been involved. Sweatshirts and sweatpants found near where Wilbanks often jogged were examined, as was a clump of hair. Her family tearfully pleaded for the public to come forth with any information, and offered a $100,000 reward. Missing persons posters and yellow ribbons appeared throughout the Atlanta suburb.

A spokesman for the Duluth Police Department stated that they had received several tips from people claiming to be psychics, but could not confirm their exact number or nature. One self-proclaimed psychic in Buffalo, New York, reportedly had a vision that Wilbanks was dead and would be found near some bushes. Another psychic, Christopher Scott, described his involvement in the case at the Blogger News Network Web site: "I am a psychic with experience in this type of investigations [*sic*] and have offered my help to Duluth police. I left my number two days ago and I haven't heard a word from them. I was involved in the murder of Robert Crane (from *Hogan's Heroes*) many years ago. I have participated in other investigation as well. . . . I have told police that it's vital that I examine her personal articles before they 'cool down. . . .' I fear Wilbanks is in dire straights [*sic*]. . . . If her parents can afford to offer $100,000 reward, they can afford to fly me in and at least allow me to examine evidence."

Missing person signs are discarded after Jennifer Wilbanks was found safe on April 29, 2005.

Some speculated that Wilbanks's disappearance might simply be a case of cold feet, coming just days before her wedding. However, friends and family repeatedly stated that Wilbanks was looking forward to the marriage and that a voluntary vanishing would be totally out of character for the bride-to-be. The investigation soon focused on Wilbanks's fiance, John Mason. He was asked to take a polygraph test, and after his home computers were seized as

possible evidence, Mason hired a lawyer.

The search ended four days after the disappearance when Wilbanks called 911 and her family from Albuquerque, New Mexico. Through sobs and stammers, she reported that she had been kidnapped and raped by a Hispanic man with a gun, along with a Caucasian woman. When FBI investigators questioned her, she admitted that she had not been kidnapped nor raped, and had simply left town on the spur of the moment because she "needed some time alone." She had taken a bus first to Las Vegas, Nevada, then to Albuquerque. Further investigation revealed that she had in fact planned the disappearance for some time, purchasing a bus ticket and setting aside extra cash. Wilbanks knew people would be desperately searching for her, and cut her hair to avoid being recognized.

Though the media-dubbed "Runaway Bride" at first refused to apologize for her actions, Albuquerque police were sympathetic to Wilbanks, giving her free clothes and gifts (including a teddy bear, an FBI hat, and a tote bag) during her stay and airplane trip back to Duluth. The reaction in Georgia—where hundreds of volunteers had spent four days and nights searching wooded areas, riverbanks, alleys, and sewage drains—was somewhat less understanding. The search had ended, but the results were bittersweet. Apparently none of the psychic detectives divined that Wilbanks was in Las Vegas or Albuquerque, and Wilbanks's family was spared the expense of a psychic's round-trip airfare to "examine the evidence."

Statistics on the numbers of false kidnappings are not kept, though I investigated the phenomenon following the hoaxed kidnappings of Dar Heatherington (a Canadian politician who vanished while on a trip to Montana in 2003 and reappeared a week later claiming she had been abducted and sexually assaulted) and Audrey Seiler (the Wisconsin college student who claimed that a man had abducted her at knifepoint and held her for four days in 2004). Faked kidnappings occur in the United States several times per month, though only rarely do the cases achieve national notoriety. Aside from the often enormous costs to taxpayers, false reports (especially those of violent crimes such as shootings, robberies, school bomb threats, rapes, and kidnappings) unnecessarily frighten the public and waste police resources. Several Hispanic organizations were outraged that Wilbanks had blamed the false rape and abduction on a Hispanic man.

Those who file false reports are rarely prosecuted. Seiler's and Wilbanks's hoaxes together cost taxpayers nearly a quarter of a million dollars. Seiler was sentenced to probation, community service, and ordered to pay $9,000 in restitution. Jennifer Wilbanks could face a misdemeanor charge of false report of a crime or a felony charge of false statements. In recent years, several states including New York, Mississippi, and Michigan have tried to address the problem of false abduction reports by passing legislation toughening penalties for those offenses.

—Benjamin Radford

Benjamin Radford wrote about hoaxes and false kidnapping claims in his book Media Mythmakers: How Journalists, Activists, and Advertisers Mislead Us.

Our Lady of the Underpass

Here we go again. Thousands of Roman Catholics have made an impromptu shrine of another unlikely spot, this time a Chicago underpass whose grimy concrete wall bears a water-runoff stain many are heralding as a miraculous "apparition." Most of "the circus crowd" saw the "big blot" as the Virgin Mary, reported the *Chicago Tribune* (May 5, 2005), dubbing it "Our Lady of the Underpass." Many were convinced it marked the passing of the popular pope John Paul II.

Virgin Mary in a water stain. Photo credit: Diana Harris

In fact, the image is merely another *simulacrum*—a "Rorschach Icon" (see SI Nov./Dec. 2004)—in which a random pattern is "recognized" by the mind's tendency, known as *pareidolia*, to interpret vague images as specific ones. (The best known simulacrum is the Man in the Moon. Frequently, the discerned image is a face or other human shape because infants begin to recognize people as soon as they can see.)

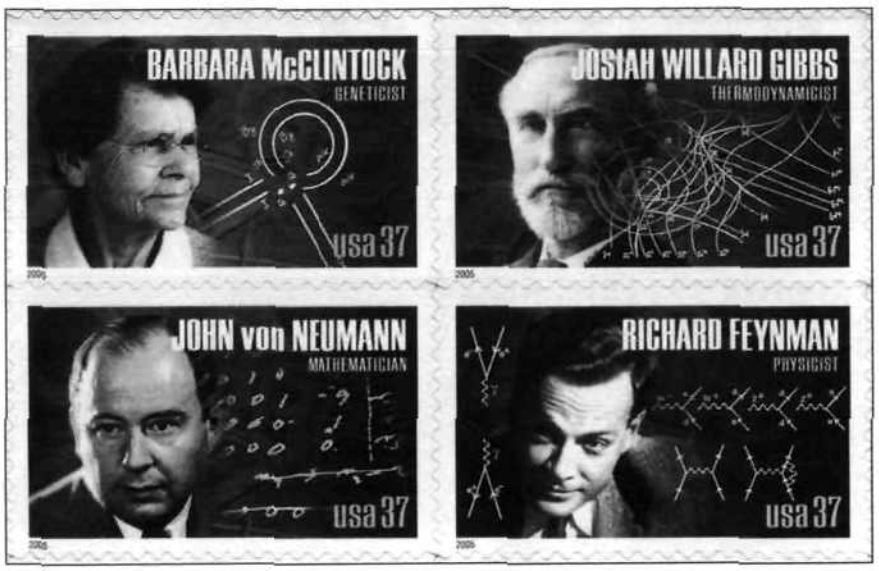
On the night of May 5, a man used black shoe polish to write "Big Lie" over the stain. State transportation workers then covered the image with brown paint, but nearby carwash employees used a degreaser to remove most of the fresh paint and polish. Some of the zealous proclaimed the salvaged image "another miracle."

—Joe Nickell

Joe Nickell is CSICOP's Senior Research Fellow and author of Looking for a Miracle.

Postal Service Gives Scientists Stamps of Approval

The U.S. Postal Service has issued four new stamps to celebrate pioneering American scientists Barbara McClintock, John von Neumann, Richard Feynman, and Josiah Willard Gibbs.



Each stamp features a picture of the scientist and artwork evoking their research:

Geneticist **Barbara McClintock** (1902–1992), whose research on maize plants led her to discover the principle of "genetic transposition." Her research greatly advanced our understanding of how genes function. For her work, she was honored with the 1983 Nobel Prize in Physiology or Medicine.

Thermodynamicist **Josiah Willard Gibbs** (1839–1903), who devised the modern system of thermodynamic analysis. His research also had an important influence on the manufacturing industries of the day. He received the Rumford Prize from the American Academy of Arts and Sciences.

Mathematician **John von Neumann** (1903–1957), who contributed to many branches of mathematics, as well as quantum mechanics, game theory, computational theory, and computer design. He also helped to develop atomic weapons in WWII. He was the recipient of the 1956 Enrico Fermi Award.

Physicist **Richard P. Feynman** (1918–1988) also helped develop atomic weapons in WWII. Through the development of his innovative "Feynman diagrams," designed to better show particle behavior, he simplified the field of quantum electrodynamics. An enthusiastic and inspiring teacher, Feynman shared the 1965 Nobel Prize in Physics with Sin-Itiro Tomonaga and Julian Schwinger.

Other science-themed stamp sets for 2005 include the "Northeast Deciduous Forest" set (released in April), "Masterworks of Modern American Architecture" (June), "Advances in Aviation" (summer), and "Constellations" (October).

—John Gaeddert

John Gaeddert is in the Public Relations Department at CSICOP, the Committee for the Scientific Investigation of Claims of the Paranormal.

'World's Most Documented Psychic' Fails to Find Abducted Granddaughter

On the afternoon of April 12, 2005, six-week-old Graciana Heughan was abducted from a Children's Aid Society office in Toronto, Canada. Within hours an Amber Alert was issued, asking the public to help look for the child, last seen dressed in a pink one-piece jumper. "We believe this baby is in imminent danger, and we want to find this baby as soon as possible," said police detective Ian Briggs.

As is often the case in child kidnappings, the baby's mother was the abductor. Lisa Heughan, a *Playboy* model, fortune-teller, and B-movie actress, was arrested the following day. Lisa Heughan's father is Anthony Carr, a prominent Toronto area psychic billed as the "World's Most Documented Psychic." Carr has appeared in tabloids such as *The Sun*, *The Globe*, *The National Examiner*, and Fox News. According to Carr's Web site, "politicians, royalty, Hollywood stars, and media people know that Carr is in a class all by himself. He has done readings for Sylvester Stallone, Frank Sinatra, Ella Fitzgerald, Lillian Gish, Richard Burton, Liberace, and Mikail [*sic*] Gorbachev." Carr appeared on the Canadian television network CTV shortly after the abduction, saying he had no idea where his granddaughter was and pleading for his daughter to turn herself in.

The child was recovered safely early the next morning, and Heughan, along with an unidentified man, were charged with abduction. Heughan, who appeared in films such as *Death Wish 5* and *Cannibal Rollerbabes*, has a history of drug abuse and mental illness. Carr's allegedly "amazing" psychic abilities apparently didn't warn him that his granddaughter would be abducted, nor did they tell him where she could be found and rescued. While some psychics offer their services "for entertainment purposes only," it seems that their powers are useless just when they are most needed—in important, life-or-death situations.

—Benjamin Radford

NASA Comet Collision to Disrupt Earth's 'Psychic Environment,' Says Russian Astrologer

On July 4, 2005, if NASA has its way, a space probe will collide with Comet 9P/Tempel 1, creating a deep, football-field-sized crater in its crust and allowing scientists to take a look at the inside of a comet for the first time. However, a Russian astrologer named Marina Bail has filed a lawsuit to forestall that event,

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UPDATE

HEADQUARTERS EXPANSION AMHERST, N.Y.

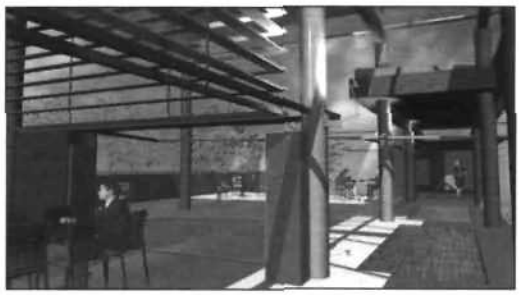
2005

The Center for Inquiry – *Transnational* announces a major 13,600 square foot expansion at its Amherst, New York, headquarters. Slated for completion during 2005, the $2.54 million expansion will more than double conference and seminar capacity, add ten urgently-needed new offices, and enlarge the Center's world-class libraries. This capital project will relieve serious overcrowding and capacity problems, supporting projected program growth of the Center and its affiliate organizations, including the Committee for the Scientific Investigation of Claims of the Paranormal, for years to come.

We are bursting at the seams, and cannot continue program growth without expanding our headquarters. The shelf space of our skeptical and freethought library—the finest in the world—is full. Yet donated books, magazines, and archival materials keep coming. There's an office or workstation everywhere we can put one, yet program and staffing needs continue to grow. Our existing conference and seminar space, opened in 1995, is often overwhelmed by larger and more complex events.

The headquarters expansion is one focus of our $26.26 million New Future Fund capital campaign. Your gift to the New Future Fund today will help to make our desperately-needed headquarters expansion a reality. We seek gifts of cash, publicly-traded securities, paid-up insurance policies, and other assets. Attractive incentive and naming opportunities are offered in acknowledgment of larger gifts. All gifts are fully tax-deductible as provided by law. Please join us and declare your support. Write, call, email, or send the bound-in postcard today!

The new addition will be erected just east of the present building, constructed in 1995.



Three large seminar rooms open off of the new building's central corridor.

Center for Inquiry–*West*, Los Angeles

Center for Inquiry–*MetroNY*, at Rockefeller Center

Center for Inquiry–*Florida*, Tampa

Located between the current and new buildings, this Garden Patio will be an exciting focus for seminar meal breaks, media interviews, and other outdoor activities.

Contact: Development Department,
Center for Inquiry – *Transnational* • PO Box 741, Amherst NY 14226-0741
(716)636-4869, ext 311
E-mail: development@centerforinquiry.net • http://www.centerforinquiry.net

Artist's concept of Deep Impact. Image credit: NASA

citing the unknown effects to the "natural balance of the Universe" that could result from such a destructive action.

The probe was launched from Cape Canaveral on a Delta II rocket in January 2001 as a part of NASA's NEO (Near Earth Object) program. The basic idea of the mission is for the Deep Impact probe, named for the space-disaster movie that was released in 1998, to be launched on a course that will intercept the comet's path as it speeds through our solar system, at a point some 83 million miles from Earth. At that point, the probe will split into two components. One, an *impactor*, carries a heavy (370-kilogram) mass studded with copper and a camera that will take close-up photographs of the comet until it is destroyed by the collision. The second, an *observer*, will record the event and its results from a safer distance via a telescope-augmented camera that will transmit images back to Earth. The impact is expected to open up a view into the nucleus of the comet, a region of matter that is thought to be a kind of snapshot of the material conditions that existed when the solar system was first formed. The outer surface of a comet is heated each time the body passes near the sun; comets normally release gas jets through vents, producing tails that can be seen streaming away from the particulate "winds" that emanate from the sun. There's a point in a comet's life span, however, when the gases are no longer released, and this research mission may provide insight into that process.

Not everyone sees the mission as beneficial. Ms. Bail, in a lawsuit filed in a district court in Moscow, claims that the "actions of NASA infringe upon [her] system of spiritual and life values, in particular on the values of every element of creation, upon the unacceptability of barbarically interfering with the natural life of the universe, and the violation of the natural balance of the Universe." Her aim in filing the suit is to prevent NASA from going through with the final stages of the $311-million mission. She is also asking for 87 billion rubles, an amount that's roughly equivalent to the cost of the mission, for what she terms "moral damages." The case was initially dismissed by the Moscow court, but Alexander Molokhov, the attorney who's representing Ms. Baíl, says that the case has been appealed and that the dismissal is expected to be voided.

The case is not without legal grounds. Molokhov notes that there are laws, in Russia and elsewhere, against "actions that can lead to damage or death." He hopes that American astrologers and even scientists will file similar suits in the U.S. courts, citing not only spiritual and psychic concerns—and the resultant anxieties—but also fears of the possible disruption of satellite communication and showers of material that would be ejected from the damaged comet.

Full details of the scientific aspects of the mission are available at http://neo.jpl.nasa.gov.

—David Park Musella

David Park Musella is an editorial assistant at SKEPTICAL INQUIRER. □

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Voodoo Science and Voodoo Politics in Florida

GREG MARTINEZ

In January 2005, the Board of Governors of Florida's state university system voted down by a 10-3 margin a plan to create a publicly funded school of chiropractic medicine at the new medical school at Florida State University (FSU) (News and Comment, May/June 2005). The decision brought an end to years of behind-the-scenes political wheeling and dealing that suddenly erupted into a firestorm of controversy in late 2004. The controversy pitted the State Legislature against the independent Board of Governors, chiropractors against mainstream medicine, and science against pseudoscience.

The origins of this convoluted tale stretch back twenty years to a Florida legislative session held in March 1984. During that session, the legislature budgeted $150,000 to study the development of a joint educational program between a Florida university and the National Chiropractic College (located in Lombard, Illinois, and presently called the National University of Health Sciences). Then-governor Bob Graham vetoed the money and noted in his veto memo that no school had requested such an allocation. This established a pattern that was followed in the 2004 legislative session.

Chiropractic education in Florida appeared to lie dormant for twelve years, until the announcement in January 1996 that FSU, in Tallahassee, the state capitol, had forged an agreement with Lincoln Chiropractic College and the Florida Chiropractic Association to jointly fund an endowed chair in chiropractic and biomechanics research at the university.

Greg Martinez lives and writes in Gainesville, Florida. He can be contacted at martineg66@yahoo.com.

The Florida state legislature got back into the chiropractic business during their 1999 session, when a new study was funded to determine the need for a chiropractic school at a state university. The study, performed by the now-defunct Board of Regents, was inconclusive, declining to explicitly recommend the creation of such a college and questioning the need for it based on the number of chiropractors in comparison to the state's population. The report offered four possible courses of action, only one of which actually addressed the creation of the college.

However, the study was perceived as legitimizing this course of action, and during the next legislative session in 2000, legislators appropriated an additional $600,000 to plan for the school. This money paid for a second study, conducted by a Tallahassee-based private company called MGT of America, Inc., to create an outline for the creation of the school. The company produced eight reports addressing various aspects of the issue, totaling 839 pages (which are available at the company's Web site). Florida Tax Watch, a private watchdog group that monitors state spending, included this funding in its annual "Turkey Watch" report and called for its veto. Governor Jeb Bush approved the measure despite this objection.

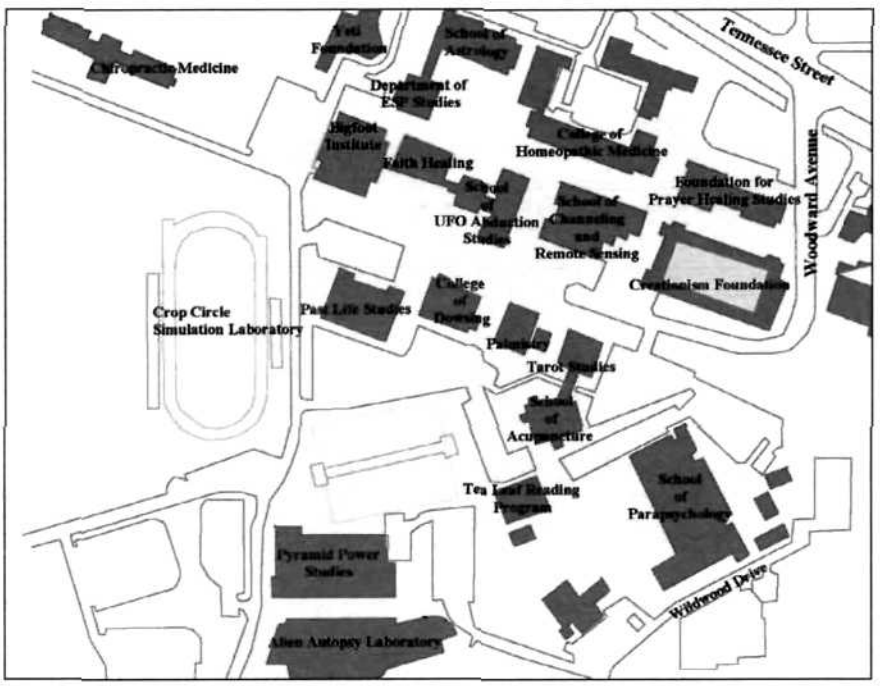
In a striking turnaround, Bush used his line-item-veto power to deny the $1.5 million that the 2001 legislative session budgeted to begin building the school. In his veto message of June 15, 2001, Bush explained that his denial was based in part on the fact that the private Palmer College of Chiropractic was building a branch campus in Port Orange, Florida, "at no direct cost to the state," so the creation of a public college would be a duplication of services.

The battle for a publicly funded school of chiropractic in Florida took a rest for two years but reemerged as a potent bargaining chip during budget negotiations in the 2004 session, an extraordinarily contentious one, even by the rather rambunctious standards of the Florida Legislature. The Speaker of the House for the 2004 session was Johnnie Byrd, who ruled his chamber unyieldingly, openly using his position to campaign for the U.S. Senate seat being vacated by the retiring Bob Graham. His hardball style conflicted violently with his fellow Republican, Senate President Jim King. The session threatened to go over its sixty-day limit, and Governor Bush, acting as a mediator in a war within his own party, helped negotiate many difficult issues.

Possibly the most significant product of Bush's efforts (politically, not legislatively) was SB 2002: Relating to Health Care Initiatives. This large, omnibus bill, which Bush signed into law March 11, 2004, included several political gifts to King and Byrd: renaming the Life Sciences Building at FSU after its proud alumnus James E. "Jim" King; renaming the Florida Alzheimer's Center and

Research Institute at the University of South Florida the Johnnie B. Byrd, Sr. Alzheimer's Center and Research Institute (named after the speaker's late father, who died from complications of Alzheimer's but, curiously, was never actually a Florida resident); and motions that authorized the Department of Health to issue a "chiropractic medicine faculty certificate for certain faculty who have accepted appointment at a publicly funded state university or college" and authorized the creation of a "chiropractic medicine degree program at FSU." This last initiative was backed up with an annual budget of $9 million, to be drawn out of recurring funds (meaning it would continue in perpetuity until a new bill was introduced and passed ceasing this annual allotment), with language surprising free of specifics. The language in the bill reads, " . . .until the School of Chiropractic Medicine is completely staffed and fully operational, these funds may be used for any purpose by the university." (Florida Tax Watch tagged several of the initiatives in this bill as "turkeys," but did not mention this rather unorthodox funding.)

One would think that a recurring allotment of $9 million with such a broad application for its use would be seen as a gift to an educational institution, such as Florida's university system, which has been enduring years of budget cutbacks. And that is what it was. At the end of each calendar year, governmental agencies and educational institutions in Florida assemble and submit to the governor very long and specific requests for funding called Legislative Budget Requests (LBRs). The Governor incorporates them into his own budget plans, and the legislature convenes for a sixty-day session starting in early March to pass a state budget. The $9-million allotment for the School of Chiropractic was not part of an LBR filed by any university, let alone FSU. This was a politically driven budget item allotted as part of a negotiation between conflicting personalities in the legislature. Senate President Jim King is an active FSU alumnus, and



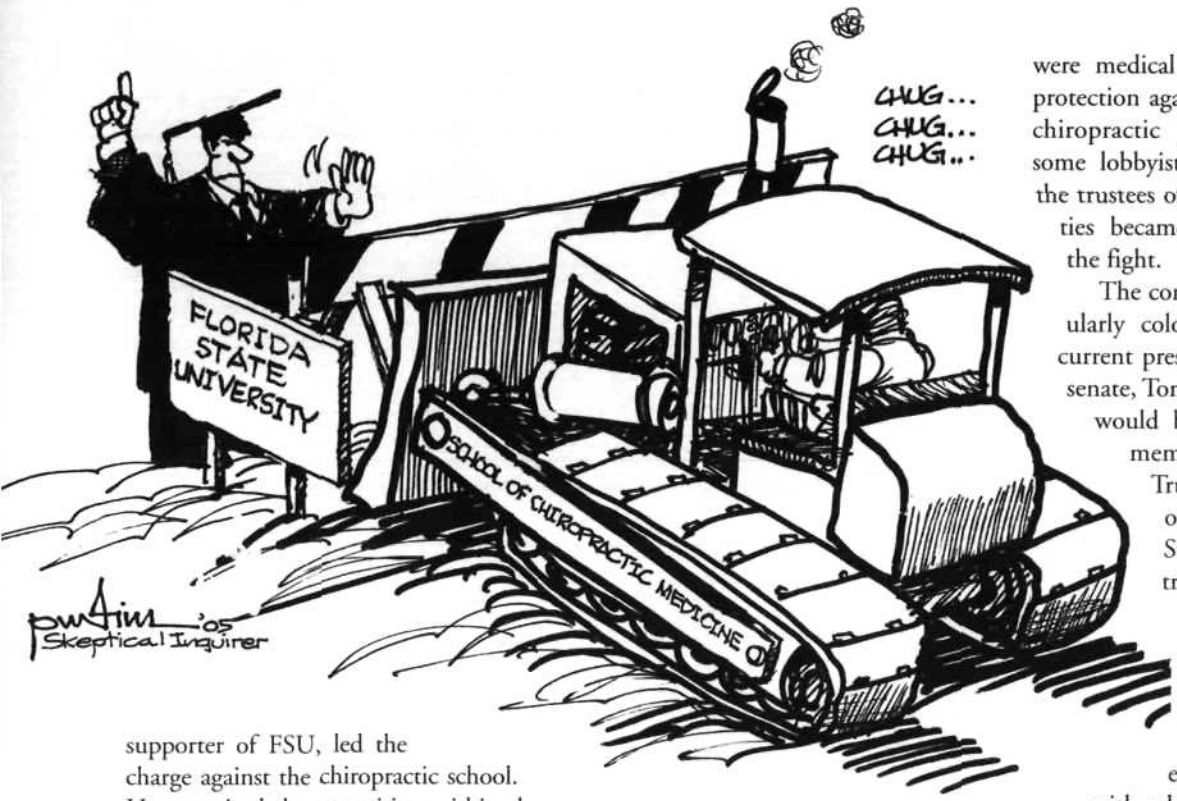
Florida State University, as envisioned by satirist and FSU chemist Albert Stiegman.

he was simply bringing some pork-barrel spending back to his alma mater.

Florida's state university system is as politicized as the legislature itself. In 2000, as a way of consolidating his control over government in Florida, Bush abolished the independent Board of Regents, which was made up of leaders from the communities that the schools in the university system serve and was independent of the executive and legislative branches of government. The governor appointed individuals to a Board of Trustees for each university, who were selected at his discretion. With no citizen oversight, the governor and legislature were free to use education as a cover for handing out budget pork and political favors. In 2002, U.S. Senator Bob Graham, a former governor of Florida, returned to the state to spearhead a constitutional-amendment drive to create a more independent Board of Governors that would restore some measure of checks and balances between the legislature and higher education. Working with the Board of Trustees, the Board of Governors would have the responsibility and the power to operate, regulate, and control the management of the entire eleven-member university system.

The brief history of the Board of Trustees has been rocky, as each side has explored what limits there are to its authority. The chiropractic school swiftly became a flashpoint for this conflict. After FSU placed advertisements soliciting resumes for the position of dean of the college, the issue moved into the courts. A group of educators led by E. T. York, the former chancellor of the state university system, filed a lawsuit charging that Bush and the legislature violated the state constitution in creating the chiropractic college without going through the normal, constitutionally mandated process. By that point, the state's news media smelled the smoke and stoked the controversy into a firestorm. The state's largest daily newspapers and their editorial cartoonists spent weeks in November and December 2004 publishing daily updates on the raging controversy. Each side sniped at the other through interview quotes and press releases.

Ray Bellamy, a Tallahassee orthopedic surgeon and a prominent alumnus and



supporter of FSU, led the charge against the chiropractic school. He organized the opposition within the faculty, which added up to hundreds of professors and instructors, including FSU's two Nobel laureates, who flooded legislators and media outlets with letters, phone calls, interviews, and petitions criticizing the school and threatening mass resignations. Albert Stiegman, a chemist at FSU, created a parody map of the FSU campus that was published in the December 14, 2004, issue of *Science* magazine, depicting campus buildings renamed as "Crop Circle Simulation Laboratory," "School of UFO Abduction Studies," "Bigfoot Institute," and so on.

Those in favor of the school are some of the most powerful people in Florida's legislature, including the senate president, Jim King, and FSU's president, T. K. Wetherell, a former Speaker of the House. The godfather of the school is Dennis Jones, a state senator from Treasure Island, who is a practicing chiropractor and was rumored to be first in line for the dean position of the new school. He attempted to turn the matter into a civil-rights issue by arguing that a public school of chiropractic would benefit Hispanics, African-Americans, and other minorities immensely by making a chiropractic degree cheaper to obtain.

Advocates for the school tried to reassure faculty that the school would have a very strong science focus. The chiropractic degree would be tied to earning a master's degree in an area like food and nutrition, movement and exercise science, or public health. However, when opponents tried to pin down whether the shaky concept of "subluxations" would be taught, the dialogue became more subdued. FSU has a fledgling medical school and at the time of the controversy was still awaiting full accreditation for it's medical degree program. Faculty and administration voiced fears that the presence of a chiropractic school would damage their reputation irreparably. (The college of medicine received its accreditation less than two weeks after the Board of Governors rejected the school.)

Lobbyists also played a major role in the controversy. The Florida Chiropractic Association and the American Chiropractic Association, along with several other professional groups, joined in the fray over the school. Their arguments were familiar: those in opposition were medical bigots engaging in turf protection against the competition that chiropractic provides. The fact that some lobbyists were also members of the trustees of FSU and other universities became a significant factor in the fight.

The controversy reached a particularly colorful eruption when the current president of the Florida state senate, Tom Lee, proposed a law that would bar lobbyists from being members of the Board of Trustees because of the obvious conflict of interest. Steve Uhlfelder, an FSU trustee and one of the most powerful lobbyists in Tallahassee, attacked Lee both during a telephone call and in media interviews, openly threatening to blackmail him with what he described as information of financial impropriety in Lee's campaign fundraising. (A few weeks later, and only after the school was rejected, Uhlfelder resigned his appointed post as a trustee.)

The fight against the school suffered a temporary setback on January 13, 2005, when the trustees of FSU declined to take a straight up or down vote on approving the school, voting 11-2 to defer to the Board of Governors to decide if the plan should continue, go into additional planning, or be rejected. This decision was roundly derided as cowardice and displaying a lack of leadership on the part of the trustees. This did prompt a change on Bush's part that may have spelled the school's ultimate doom. Bush stated in an interview after the vote that the school had become entirely too politicized and the trustees "should have voted their conscience." While this about-face in his political support of the school helped guide the board in its ultimate vote, the school's supporters were incensed. Jim King was quoted in many media reports as feeling betrayed by the governor.

The Board of Governors met on January 27, 2005, at the University of Florida, in Gainesville and after long discussions voted decisively to reject the creation of the nation's first publicly funded chiropractic school. This would seem to settle the matter, but the advocates of the school declared it only a setback and released public statements floating the possibility of trying to place the school at a smaller university, like the University of South Florida in Tampa or the University of Central Florida in Orlando. For his part, Jim King was furious, promising retribution to the Board of Governors, and is attempting to find a way to make FSU pay back all the funding that the institution has received so far for the school.

In the January/February 2002 issue of SKEPTICAL INQUIRER, Michael De Robertis wrote of the long and grueling fight over a chiropractic school merging with Canada's York University. At the article's conclusion were several pieces of advice offered as guidance for any other institution facing such a situation. Ray Bellamy appears to have followed much of this advice in his fight and thus far has been very effective. His strategy may have indeed defeated the creation of such a college in Florida. Bellamy was quoted in an interview in the *St. Petersburg Times*, saying of his opponents: "I want them so bruised, they never bring this up again." □

cfi **CENTER FOR INQUIRY** *Transnational*

Sculpture Contest

The Center for Inquiry–*Transnational* is pleased to announce a worldwide contest for the design of public sculptures to be installed at the new research building of the Center for Inquiry in Amherst, New York, adjacent to the State University of New York at Buffalo, Amherst Campus. The building will have sculpture courts where original pieces of art will be displayed.

The theme of the sculptures should be related to the furtherance of reason, science, freedom of inquiry, and human enrichment. There are already examples of sculptures that express humanist themes that were created by artists of the past, including statues of Prometheus, Rodin's *The Thinker* and *The Embrace*, the bust of Voltaire, and the statue of David Hume in Edinburgh, Scotland.

Possible subjects could include:

- an affirmative statement of humanism/skepticism;
- a symbol of "our planetary habitat";
- the heroic glorification of human endeavor or achievement.

Artists' guidelines:

- Redefine an exiting humanist motif or create a new one.
- The message should be both apparent and open to interpretation.
- The artwork should be quietly impressive rather than overwhelming.
- We encourage artists and sculptors to come up with something daring.

A first-place prize of $10,000 will be awarded to the winner, in addition to a stipend for materials used in producing the finished work. Lesser prizes for second place ($5,000) and third place ($2,500) may also be awarded. A board of art experts will be appointed to make the selections.

We invite artists/sculptors to submit preliminary applications describing what they would like to do or statements of what they would be trying to express before proceeding.

Please respond before August 1, 2005, to *Transnational* Sculpture Contest, P.O. Box 741, Amherst, NY 14226-0741; e-mail development@centerforinquiry.net.

The Case of the 'Psychic Detectives'

Although mainstream science has never validated any psychic ability, self-styled clairvoyants, diviners, spirit mediums, and soothsayers continue to sell their fantasies—and in some cases to shrewdly purvey their cons—to a credulous public. Particularly disturbing is a resurgence of alleged psychic crime-solving.

In fact, the media—especially Court TV's *Psychic Detectives*, NBC's *Medium*, and various programs of *Larry King Live*—have shamelessly touted several self-claimed psychic shamuses as if they could actually identify murderers and kidnappers, or locate missing persons. Here is an investigative look at five such claimants. (Another, Phil Jordan, was featured in an earlier SI [Nickell 2004].)

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Joe Nickell, a former investigator with a world-famous detective agency, is CSICOP's Senior Research Fellow. His books include Crime Science *and* Psychic Sleuths.

Allison DuBois

Allison DuBois is the "real-life" Phoenix-area clairvoyant/spiritualist whose alleged assistance to law enforcement is the basis for NBC's drama series *Medium* (featuring Patricia Arquette as DuBois). Executive producer Glen Gordon Caron (creator of *Moonlighting*) says of DuBois: "I was amazed by her tale. She has this radio in her head that she has no control over. Wherever she looked, she saw dead people. It was a tremendous albatross in terms of having a family life. And I thought, 'I've never heard that story before, certainly not from the point of view of a soccer mom'" (Hiltbrand 2005).

But Caron has been snookered. The *Medium* Web site (www.nbc.com/Medium/) boasts that "DuBois has consulted on a variety of murders or missing persons cases while working with various law enforcement agencies including the Glendale Arizona Police Department, the Texas Rangers, and a County Attorney's office in the Homicide Bureau." In fact, however, both the Glendale police and the Texas Rangers deny DuBois worked with them. Glendale police spokesperson Michael Pena told SI managing editor Benjamin Radford that the detective who investigates missing persons cases "does not recall using DuBois at all in [one specific] case, or in any other cases." And Texas Rangers spokesperson Tom Vinger stated flatly to Radford, "The Texas Rangers have not worked with Allison DuBois or any other psychics" (Radford 2005, 7).

It is curious in any event that the show's Web site claims only that DuBois "consulted" on cases—not that she solved a single one. The site mentions that DuBois is "the youngest member of the elite medium 'Dream Team' studied by Dr. Gary Schwartz at the University of Arizona in Tucson." That isn't much to boast of: Schwartz, a professor of psychology and psychiatry at Arizona, is credulous about the paranormal, and his book *The Afterlife Experiments* (2002) claims he has provided scientific evidence for the survival of consciousness and the reality of spirit communication. However, noted parapsychology critic Ray Hyman (2003, 22) observes that

Schwartz is "badly mistaken," adding: "The research he presents is flawed. Probably no other extended program in psychical research deviates so much from accepted norms of scientific methodology as this one does."

Nevertheless, the publicity DuBois receives "appears to have been good for business," according to one reporter (Hiltbrand 2005) who notes that DuBois now has a "backlog of murder cases," for which she does not charge, and years of bookings for personal readings, for which she does. She also acts as a jury consultant for prosecutors (Bloom 2005). DuBois thus follows the approach of the late Illinois psychic Greta Alexander who worked free with police at every opportunity, which brought her publicity, thus aiding her business of offering palm readings, operating a 900-number telephone inspiration line, selling astrology and numerology charts, and other endeavors (Nickell 1994, 12; Lucas 1994, 134).

Noreen Renier

High-profile "psychic" Noreen Renier employs an old divination technique called psychometry, by which she claims to get psychic impressions and visions from objects connected with a particular person. Actually the claim of psychometric power is testable, but Renier does not seem willing to accept the challenge of psychic investigator James Randi, who offers a million dollars to anyone who can exhibit such a power under scientifically controlled conditions. (See Randi's article in this issue.)

Indeed, like many alleged psychics, Renier prefers to avoid skeptics, instead offering her alleged paranormal abilities to the credulous.

For example she claims to have had a vision of President Reagan's attempted assassination. Actually, there are varying accounts of just what Renier actually said. When asked under oath about having predicted Reagan would be shot, she answered: "Some of those predictions were not mine. The newspaper put in three or four jazzy ones without my—I didn't do two or three of those predictions" (Posner 1994, 65). Renier is reported to have a history of such predictions, forecasting that after his reelection in 1980 President Jimmy Carter would be assassinated on the lawn of the White House; she also saw Vice President Walter Mondale committing suicide (Posner 1994, 66).

Regarding Reagan, on various occasions Renier apparently referred to chest "problems," possibly a heart attack or at least some chest pains. Then she converted that to a gunshot, finally stating, according to FBI agent Robert Ressler (1986, 12, 13), that Reagan "would be killed in a machine gun assault on a parade stand by many in foreign uniforms. . . ." Renier was then in a position to use a technique called *retrofitting* (after-the-fact matching). She could score if Reagan had a coronary or other chest pains or problems, or if there was an attack on his life, with or without a bullet to his chest, whether he survived or not—or he could die in a hail of gunfire. In fact, Renier's error regarding the machine-gunning was later shifted to claim successful prediction of the assassination of Anwar Sadat of Egypt. Renier shrewdly observed that she hadn't said "*which* president" (Posner 1994, 64).

One of Renier's most celebrated "cases" is that of a missing Williston, Florida, resident, 76-year-old Norman Lewis, who vanished on March 24, 1994, and remained missing for two years. The police supposedly had no leads or suspects, but when Renier was consulted she immediately "saw" Lewis in his red truck. She also visualized the numbers "45" and "21" and other "clues," including a cliff wall, loose bricks, a bridge, and railroad tracks. This led police to a rock quarry, and Navy divers soon located Lewis truck with his skeletal remains. Or so the case is typically presented in the media, citing Renier and Williston police. Court TV (September 22, 2004) featured a slanted treatment of the case that omitted crucial information and offered a highly dubious recreation of events. Like so many psychic sleuth success tales, this one seems to get better with each retelling.

However, the Williston case was thoroughly investigated by Dr. Gary Posner (1997, 2005) with revealing results. Williston police actually knew that Lewis was "despondent" and had confided to a friend that if his situation deteriorated "he would find a river or pit"—that is, one in which to end his life—and "made some reference to knowing every rock pit in the county." Significantly, Lewis had left behind both his wallet and his respiratory inhaler (he had emphysema), clues suggesting he did not intend to return.

Renier had been informed that Lewis's truck had not been found, despite intensive searching. If it was in the vicinity, notes Posner (1997, 3), it must surely have been "submerged in a body of water." If Renier had looked at a map—something she appears often to do (e.g., Voyles 1999)—she would have observed that the Williston area is dotted with limestone quarries and crisscrossed with railroad tracks, as well as highways 45 and 121. In fact, the police had looked "into several bodies of water," notes Posner (1997, 2), prior to searching the Whitehurst pit, where Lewis's truck and remains were finally found.

Like many alleged psychics, Noreen Renier prefers to avoid skeptics, instead offering her alleged paranormal abilities to the credulous.

Actually, a different pit was nearer Lewis's home, and Posner (1997, 2, 6–7) observes that it best matched the psychic's so-called clues. However, the lead detective on the case, Brian Hewitt, admitted he had "walked around probably 30 quarries" before finally determining to search the Whitehurst pit. If Lewis had traveled north instead of south on the main road from his home (Route 45), the first large quarry he would reach was the Whitehurst pit.

The "clues" Renier provided were either obvious for the area or were the result of retrofitting. After the fact, for example, abandoned railroad tracks that were belatedly uncovered, and an old truck scale that resembled a "bridge," were interpreted by obviously credulous police to fit Renier's statements.

Carla Baron

Yet another would-be clairvoyant is "psychic profiler" Carla Baron of Los Angeles. She makes grand claims—such as having solved fifty cases during the last two decades—but there is little to substantiate them. That is the conclusion of the Independent Investigations Group (IIG), which examines paranormal claims, especially in Baron's bailiwick. The group looked into fourteen cases Baron has claimed involvement with, concluding that "every case we investigated was either solved without Baron's involvement or remains unsolved" (IIG 2004).

For example, her publicity materials assert that she worked on the "O.J. Simpson case." She has also claimed to have done "some channeling work" on that case, specifically with the Brown family. The IIG, however contacted Nicole's sister, Denise Brown, who was primary spokesperson for the family during the Simpson trials, and is now an advocate for victims of violent crime. She responded, "I've never heard of this person," adding that none of her family members has ever heard of Baron either. Concludes the IIG (2004), "It seems clear that Baron's claim that she worked on the 'O.J. Simpson case' is baseless."

As another instance, Carla Baron claimed on a Los Angeles radio program that she had predicted correctly that Elizabeth Smart would be found alive. (Alive or dead is a fifty-fifty proposition.) The kidnapped fourteen-year-old was found alive, a hostage of a cult leader calling himself "Emmanuel." Baron further claimed that she provided information to Ed Smart, Elizabeth's father, through a tip hotline operator named "Melinda," and the psychic's publicity materials list the Smart case among those she has allegedly worked on; however Ed Smart was quoted as saying that "the family didn't get any valuable information from psychics" (IIG 2004).

Baron has reportedly stated: "I don't think it's about the accuracy. I think it's about the assistance that I give." The IIG (2005) report responds:

> But how can you assist people with inaccurate information? Doesn't providing the missing piece of the puzzle, or insight and information, connecting the dots usually lead to a solution? Implicit in the claim of being a "psychic detective" is the claim that you provide accurate information that leads to the successful resolution of a mystery. Imagine if a police detective said, "police detectives don't actually solve the case, they just come up with ideas and hope for the best." Such a statement would not generate much confidence in police procedure, and rightly so.

Carol Pate

We hear a lot about psychics' alleged successes, but less about their much more frequent and notable failures. Take two "cases" of Little Rock, Arkansas, psychic Carol Pate, for example. The first is claimed a success.

Pate appeared on Court TV's *Psychic Detectives* and *Larry King Live* regarding her alleged assistance in the case of a missing Arkansas teenager. Although it was claimed that Pate "helped find" the boy ("Psychics" 2004), she did nothing of the sort. He was released after being repeatedly raped by his kidnapper. So when the announcer for *Larry King Live* asked, before a commercial break, "Can detectives use a psychic's vision to catch a kidnapper?" ("Psychics" 2004), the answer is, no. Pate could only try to match up her stated "clues" by using the police psychic's stock-in-trade, retrofitting. For instance the word *ridge*, says Pate, "came into my head," and Ridge Road was the name of the main route leading away from the kidnap site ("Psychics" 2004). Pate could easily have learned this fact when she visited the location or consulted a map.

Another case involving Carol Pate concerned Dr. Xu "Sue" Wang of Darien, Illinois, who disappeared in 1999 after she left for work at a medical center. Just over a year later, Carol Pate claimed that, from photos mailed to her by the Darien police, she had a psychic vision. She said she visualized the scene where Wang had been buried in a previously dug grave (Zorn 2000a). Subsequently, the police, acting on Pate's advice, announced plans to conduct an aerial search as well as use dogs to look for the missing physician's burial site ("Police" 2000).

Reporting on Pate's claims, *Chicago Tribune* columnist Eric Zorn was skeptical. He quoted me as stating, "They count their lucky guesses and ignore all their misses," and "I have just one question for all of them: Where's Jimmy Hoffa?" Zorn (2000a) gave odds that the police would not "find anything," and concluded that Pate was merely "guessing."

Subsequently Zorn sent an e-mail to SKEPTICAL INQUIRER, quoting Darien's deputy police chief Ron Campo. Campo said of Pate's psychic input, "It didn't pan out." Concluded Zorn (2000b): "Turns out the woman was just guessing, like every other phony who claims to have such powers—exactly, eerily as I predicted. Hey, d'ya suppose. . . ?"

Etta Louise Smith

One of the most unusual "psychic" cases I ever investigated was that of Etta Louise Smith. Actually Smith never claimed to be a psychic sleuth, but she allegedly had a one-time "vision" of a murder victim's body. This was so accurate that it led to her arrest by Los Angeles police, although she was subsequently "vindicated" by a Los Angeles Superior Court jury. The case occurred in 1980, but was featured on a *Larry King Live* program in 2004, hosted by Nancy Grace.

Smith's alleged vision was of the location of the body of a missing nurse, Melanie Uribe, at an area in rural Lopez

Canyon. Indeed, after Smith had gone to the police and pinpointed the location on a map, she decided to drive to the site with two of her children. They had located the body and were en route to a telephone when she met the arriving police!

She was later questioned about her precise knowledge and was given a lie detector test, which she failed. According to a detective's sworn testimony, "the polygraphist indicated that she was being deceptive," even "trying to control her breathing" (Guarino 1987, 5, 10). She was jailed for four days on suspicion of having some connection with the crime or criminals.

Smith subsequently sued the police for the trauma she had suffered, asking $750,000 in damages. She won her case, but the jury, some of whom were apparently suspicious of Smith's "psychic" vision, awarded her a mere $26,184—sufficient to reimburse her for lost wages and attorney's fees, but providing little for pain and suffering (Varenchik 1987).

Forensic analyst John F. Fischer and I looked into the intriguing case, obtaining court transcripts and other materials, and concluded that it was possible to be skeptical of Smith's psychic powers without suspecting her of being an accessory (Nickell 1994, 161–162). We recalled an earlier case in which police concealed an informant's identity by means of a cover story attributing the information to a psychic. Is it not possible that an acquaintance of Smith, privy to information about the crime, sought her help in revealing the information? Could Smith not merely have been protecting her source? The possibility gains credibility from the fact that the killers were uncovered because one of them had boasted of the crime to people in his Pacoima neighborhood and, at the time, Smith lived in Pacoima! Interestingly, as Smith went searching for the nurse's body, her psychic powers seemed to wane, and it was one of her children who actually spied the white-clad corpse (Klunder 1987; Varenchik 1987, 44–45).

That Smith could locate the canyon site on a map is revealing. She was clearly not employing a technique of divination (such as map dowsing, which usually involves the use of a pendulum) to locate something hidden (Guiley 1991; Nickell 1994, 163–164). Instead, she seemed already to know the location and was merely seeking to identify it on a map for police. Smith appears to have given conflicting accounts of her "vision." She said on a television program, "It was as if someone had put a picture right in front of me" (*Sightings* 1992). Yet the book *Psychic Murder Hunters* assures us, "Strangely Etta didn't have a vision of any kind—she described it as a feeling rather than a vision" (Boot 1994, 348).

That her alleged vision was a one-time occurrence would appear to support police suspicions, as would the failed polygraph test, especially the allegation that she was trying to control her breathing. Revealingly, the National Center for Missing and Exploited Children cautions against completely ignoring such "psychic" tips, since the purported visions may be a cover for someone who is afraid or otherwise unwilling to become directly involved (Henetz 2002).

* * *

As these cases and profiles indicate, psychics do not solve crimes or locate missing persons—unless they employ the same non-mystical techniques as real detectives: obtaining and assessing factual information, receiving tips, and so on, even sometimes getting lucky. In addition to the technique of "retrofitting," psychics may shrewdly study local newspaper files and area maps, glean information from family members or others associated with a tragedy, and even impersonate police and reportedly attempt to bribe detectives (Nickell 1994). It is bad enough that they are often able to fool members of the media; detectives, if they do not know better, as most do, should learn better. They should, well, *investigate* their alleged psychic counterparts.

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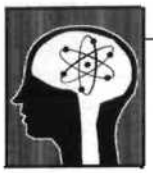

Are the Historical Sciences Sciences?

Are historical sciences somehow inferior to experimental ones? This attitude, sometimes referred to as "physics envy" (when adopted by non-physicists), is one of the most pernicious myths surrounding science and its practice. Everybody knows that physics is the queen of the sciences and that scientists in other disciplines are simply trying to catch up to the high standards set by Newton and his intellectual descendants. Right?

According to many practicing scientists (myself included), this is just a big load of dingo kidneys, and work done in the philosophy of science by Carol Cleland (e.g., Cleland 2002) has elegantly shown why. Cleland begins by acknowledging that there actually is a continuum between largely ahistorical disciplines—such as fundamental physics—and largely or exclusively historical ones—like paleontology or astronomy. This continuum passes through disciplines such as ecology and evolutionary biology, where one finds a mix of experimental and "detective" work, due to the fact that the objects of study (population of living organisms) do lend themselves to experimental manipulation but the results of such manipulations depend to a large degree on the past (often unknown) history of the objects themselves.

For Cleland, the fundamental distinction here is between sciences that attempt to predict the future and those that focus on "*post*diction" of the past (for obviously, one cannot *pre*dict the past). A predictive science has to deal with what Cleland calls "the underdetermination of the future by the localized present," while a postdictive science is characterized by "the overdetermination of the past by the localized present." These are crucial concepts, which themselves rely on the asymmetrical arrow of time. Let us consider two illustrative examples from Cleland's paper.

Suppose we predict that a short circuit will cause a fire in a house. This may be a reasonable prediction, but it depends on a variety of other circumstances (co-occurring causes) in order to be true: not only does there have to be a short circuit, but the house has to have nonfunctional sprinklers, for example, or there has to be sufficient flammable material around, and so on. The prediction of the event, in other words, is underdetermined by the individual causes: one cause is not sufficient to guarantee the outcome. If this were a scientific hypothesis, we would have to be very specific about which other conditions ought to hold for the hypothesis to be verified (or rejected); just because the fire didn't occur, we are not authorized to reject the hypothesis that a short circuit causes a fire because the house also happened to have an efficient sprinkler system, without which the predicted outcome would, in fact, have happened. This is why, in physics and other experimental sciences, one has to specify the conditions of an experiment very carefully: without such precaution, too many *other* things might explain why the prediction was not accurate. The price for our ability to predict the future is that we can do so accurately only under very restrictive conditions; the more we relax such restrictions, the less we can falsify our hypotheses (because factors other than the focal one may have changed) and the less accurate the predictions become.

On the other hand, consider the other example discussed by Cleland: a baseball hitting a window. If you come home and see just a few pieces of glass scattered on the floor *or* the bill from a company that replaces windows *or* see a baseball on the floor that couldn't have gotten into the house in any other way because you had locked all entrances when you left, you would be able to infer the past event with a high degree of reliability. This is because the present situation overdetermines the past event; like Sherlock Holmes, you need surprisingly few clues to infer an amazing amount of detail, a situation that allows detectives, archaeologists, and astronomers to make a living.

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The asymmetry of the two situations, then, lies in the fact that predictive sciences are attempting to go from causes to effects, while postdictive ones go from (some of) the effects to the likely causes. The irony of Cleland's analysis is that, because of the asymmetry in the determination of causes and effects, postdiction is actually much more powerful than prediction, in some sense turning on its head the classic view of historical sciences as "inferior." This is of course not a call to crown paleontology as the queen of the sciences, but rather a very healthy warning—based on a clever philosophical analysis—about the actual nature of scientific evidence.

Many sciences, as I mentioned at the beginning, in fact feature a complex mix of experimental and historical research, and as such, they may vary greatly in their effectiveness at prediction and postdiction of the phenomena of interest. What is still common to all science as a human activity aimed at understanding the natural world is that all scientific disciplines rely on some type of empirically based hypothesis testing. One may have to specify strict conditions for prediction, or abandon prediction entirely in favor of postdiction, but there have to be ways to test either the predictions or the postdictions by using empirically (i.e., either experimentally or observationally) obtained data. If one cannot do this, then one is not engaging in science—*pace* the proponents of so-called Intelligent Design theory and other such inanities.

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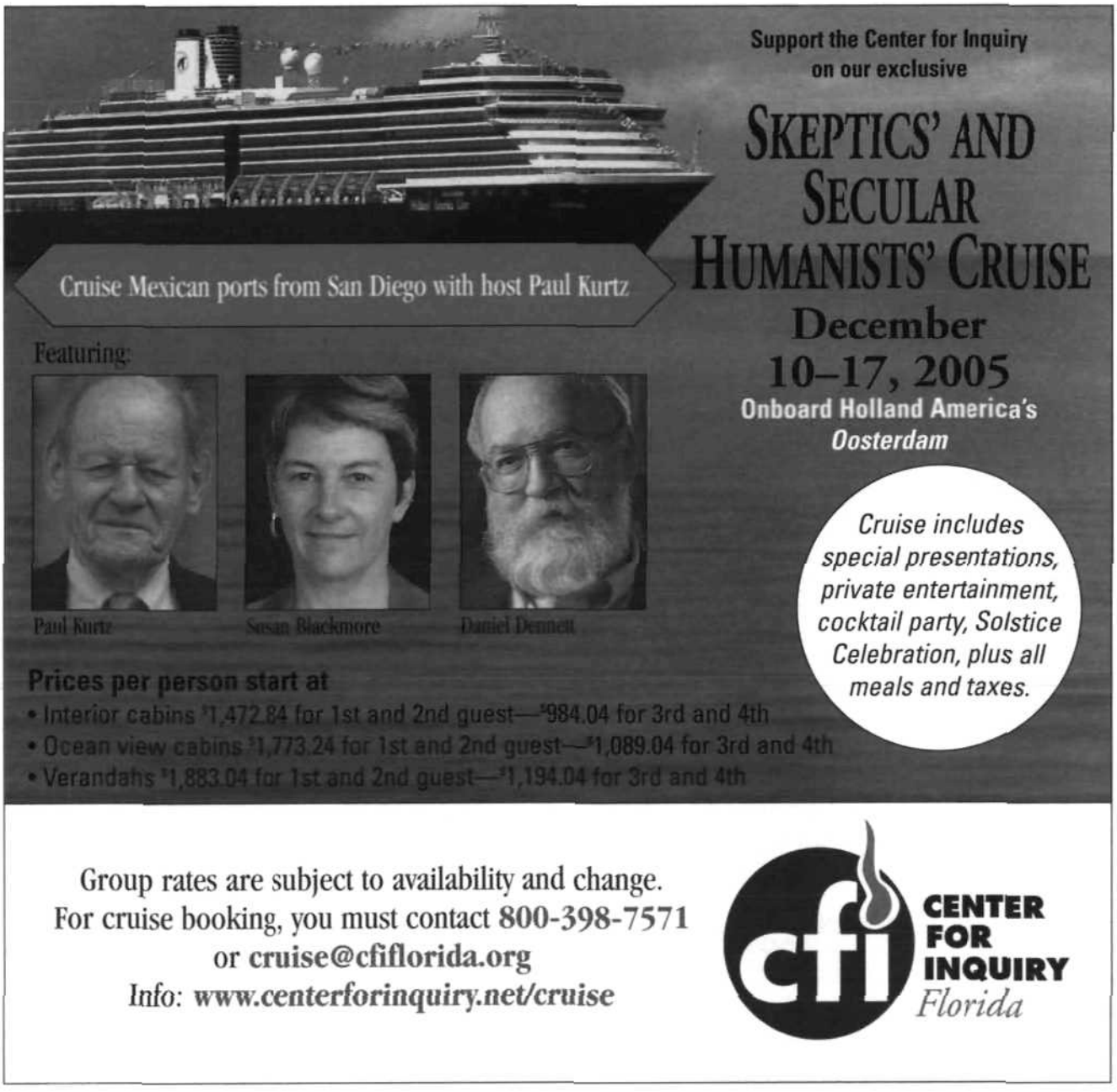
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The Story of a '*Greata*' Medium

There once was an Italian Spiritualistic medium who had both the pleasure of astonishing Sir Arthur Conan Doyle, the creator of Sherlock Holmes and a fervent believer in Spiritualism, and the "honor" of being unmasked by Harry Houdini, the great magician and skeptic.

Nino Pecoraro was born in Naples in 1899. He had tried to perform his mediumistic stunts in Europe, apparently impressing some reputable scientists, and then traveled to the United States in search of fame. He worked in a drug store during the day but, at night, he claimed he could go into a trance and call the spirit of one of the greatest mediums—some would say the greatest charlatan—who ever lived, Eusapia Palladino, another Italian. Thanks to her, he could ring a bell, levitate a table, and create other strange phenomena. Since he spoke no English, he was usually accompanied by his employer and mentor, Dr. Anselmo Vecchio.

Nino Pecoraro.

Challenging Giants

Pecoraro's first big break came when Conan Doyle visited the United States in 1922 for a lecture tour on Spiritualism. During his trip he visited a number of mediums and, on April 14, he attended a séance with Pecoraro. The meeting had been arranged by Hereward Carrington, a well-known psychic investigator. Nino was tied with picture wire and placed in a darkened cabinet. There were shrieks, a toy piano on the table tinkled, and, between hymns, Sir Arthur spoke with the spirit of Palladino.

"I who used to call the spirits aback," said Palladino speaking through Nino, "now coma back to be a spirita myself."

"Is that you, Madame Palladino?" asked Carrington.

"Yes," came the reply in a whisper.

"The power is getting stronger, Palladino," interjected Conan Doyle. "We send you our love and our best encouragement."

Needless to say, Sir Arthur was very impressed by the medium.

Houdini's turn to be impressed came the following year. *Scientific American* had launched a challenge to all psychic mediums to perform their feats under controlled conditions and win a prize. Scientists, psychic investigators, and one magician, Houdini, formed a committee to decide how to prepare the tests.

In December 1923, the committee had examined just a few lesser mediums, finding no real candidate for the prize, when they stumbled upon Pecoraro.

It was actually Carrington, a member of the committee, who had proposed the medium to participate in the *Scientific American* contest. Pecoraro held four séances for the *Scientific American* judges, on December 10, 14, and 18. During the

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first séance, Nino was tied to a chair with sixty feet of rope, beside him was a table with tambourines, bells, and trumpets; he was then hidden from view by a curtain. After a while, noises were heard from behind the curtain: raps, rings, and shrieks by Nino. At the end of the séance, Nino was found lying on the floor, still tied to the chair. The same things happened during the second séance.

O.D. Munn, the editor of *Scientific American*, suspected that Nino had been able, somehow, to free one hand and to play the instruments. He thus wired to Houdini, then on tour with his magic show, requesting his presence in New York. Houdini took the first train and, when he arrived at the December 18 séance, he was amazed to discover the kind of controls that had been imposed upon the medium. Nobody, he explained, could be securely fastened with one long piece of rope: it was too easy to get some slack and get free. He cut the rope into dozens of shorter pieces and with those proceeded to tie Pecoraro: it took him almost an hour and forty-five minutes to finish the job. After that, all the phenomena disappeared and Nino did not win the prize.

Here is how Houdini described the episode to his friend Harry Price in a letter dated December 19, 1923: "Last night I tied up a medium for the *Scientific American.* He is called the 'boy wonder' but is 24 years of age. There were no manifestations with the exception of raps which he managed to make by striking his foot on the side of the cabinet. They asked me to tie him up so that he could not move—and he stayed put. Personally, I believe the man is mad and thinks the 'spirits' help him. He is a powerfully built fellow, has great curved shoulders and an enormous amount of endurance—but he did not get out. You will read a detailed account later on."

No formal decision was rendered by the judges, since Dr. Vecchio, who still protested that his medium was genuine, was granted the privilege of more sittings in January. These, however, appear not to have been claimed by the medium. Neither Pecoraro nor anyone else ever won the *Scientific American* prize.

Nino was tied to a chair with sixty feet of rope, beside him was a table with tambourines, bells, and trumpets; he was then hidden from view by a curtain: After a while, noises were heard from behind the curtain: raps, rings, and shrieks by Nino.

Nino Pecoraro and Houdini.

"Dunninge! This is Houdeen!"

Houdini died in 1926 and one question often asked after his death was: "Can Houdini come back?" Sir Arthur was convinced that, after "a period of complete rest," he would return. Bess Houdini, the wife of the magician, was obviously skeptical but probably wished to receive a sign. "I want so to believe in a communication with my husband," she told a reporter. "Every day I get letters from people who say they are able to feel his presence and catch his messages. But they have nothing to show me—no proof. Perhaps they are sincere, these mediums, but they are unconvincing." One of the first mediums to claim contact with Houdini was, not surprisingly, Nino Pecoraro.

At the time of *Scientific American's* offer to mediums, another smaller magazine devoted to the popularization of science, *Science and Invention*, noticed the interest that surrounded the investigations and quickly announced a $1,000 prize of its own.

Chairman of the investigating committee was Joseph Dunninger, the famous mentalist and a friend of Houdini. He was soon joined by another friend of the "king of escapes," Joseph Rinn, who put $10,000 of his own to increase the size of the award. The prize was later augmented when both Dunninger and Bess Houdini added $10,000 each to the challenge. The award, totaling $31,000, looked attractive enough for Nino Pecoraro who, on April 26, 1928, appeared at the offices of *Science and Invention.*

A preliminary séance, where nothing peculiar happened, had taken place at Bess's house. Now it was time for the official test. Nino, seated in a chair, was bound by the committee. His hands were

covered by two leather gloves, which were sewn to his shirt. He was tied to the chair with ropes, their knots sealed. He was thus placed in a corner of the room and a curtain drawn in front of him. After ten minutes, a voice in falsetto claimed to be the spirit of Eusapia Palladino; soon after that, the voice claimed to be Houdini: "Dunninge! This is Houdeen! How are you, Dunningee!" "Both," commented Dunninger, "sounded as though uttered by Nino. Houdini's voice was far from natural." The voices kept promising remarkable phenomena: a wax hand impression, table raps, the materialization of Houdini's spirit . . . none of which occurred.

Afterwards, Nino Pecoraro sent a letter to Dunninger and to the press protesting the "grossly unfair treatment I received at your hands." He then challenged Dunninger himself, saying that "you, with all your trickery notwithstanding, are unable to produce any of the phenomena which I am able to produce under the strictest test conditions." He then went on describing the restraints that both he and the mentalist had to be subjected to and concluded: "I defy you to produce the phenomena which I shall produce."

Dunninger easily saw through this further weak attempt at getting some publicity, and replied to Nino saying that he considered his challenge "exceedingly humorous. Permit me to remind you that you have had two sèances prepared for you . . . you have produced absolutely nothing that could not be duplicated by any six-year-old child. . . . If you are a genuine medium and can produce phenomena, why did you not do so during any of these tests that have already been arranged for you? You promise everything and produce practically nothing."

"Permit me to remind you that you have had two sèances prepared for you . . . you have produced absolutely nothing that could not be duplicated by any six-year-old child . . . . *You promise everything and produce* practically nothing."

Nino Pecoraro and Anselmo Del Vecchio.

The Confession

Eventually, Nino decided to give a full confession to Dunninger, whom he respected and considered a friend. In April 1931, he said to the mentalist: "To-night, I am going to exposa spiritualism. Exposa the whola damn business. I am a greata medium; but wat I get? Not even a packa cigarettes!"

He explained that when he was still in Italy, approaching the time for him to join the army, he found himself capable of acting like he was in a trance, along with wild spasms. He was bound many times, also in a straitjacket, and he found he could escape and was pleased by it. By acting wild he was finally declared unfit for military service.

Nino then came to America and had a big hero he wanted to surpass, Houdini, but he wanted to do it by being a medium and escaping from bonds. In the beginning, séances were profitable, but irregular. It was not a desire to dupe people that started him as a medium, Dunninger thought. Nino wanted attention, to be the center of a show.

He went on explaining how he created his phenomena and then signed a complete confession. His chief reason for confessing appeared to be a disappointment that his hopes had not been realized. Other mediums had made money. Nino was convinced that his work was superior to theirs, but he had been unable to capitalize on it.

After the confession, he tried for a while to start a career doing an escape act, wishing to emulate Houdini, but his rude manners and lack of ability in managing business took him nowhere.

Nino Pecoraro returned to Italy in 1932, repudiated his confession, and devoted himself to "astral paintings," painting abstract art while claiming to be directed by entities from other dimensions. He never achieved the heights he had reached in America, but at least he was one of the very few who on his deathbed, in 1973, could look at photographs of himself with both Conan Doyle and Houdini. He had not become rich, but at least he had had some fun. □

Where the UFO Conspiracy Theories Roam

The International UFO Congress has been taking place each March in Laughlin, Nevada, for fourteen years (see www.ufocongress.com) and I had yet to attend, so I figured it was about time. Most UFO conferences are set up around a weekend and run concurrent sessions, forcing upon the attendee difficult choices like, "Do I want to hear about the alien stargate conspiracies, or the giant machines orbiting in the rings of Saturn?" But the Laughlin UFO Congress runs a full seven days, from Sunday afternoon to Saturday evening, and the presentations all take place in one huge hall, enabling those with an insatiable appetite for the bizarre and the impossible to take in every last glorious rant.

I decided that two days' UFO enlightenment would be as much as I could stand, being careful to leave sufficient time for other important pursuits like sightseeing and gambling. Some people are surprised to learn that these days UFO conferences spend very little time talking about anything as mundane as sightings of flying disks. Unless you have a really elaborate alien abduction claim, or a new angle on some major conspiracy, nobody will be very interested in what you say. This will not surprise those who are familiar with Marty Kottmeyer's depiction of UFOlogy as an "evolving system of paranoia"—it has "evolved" itself right out of its origins in Cold War weapons technology paranoia, and into contemporary New Age narcism and health obsessions. Every mark on your body, every minor ailment, may well have been caused by sinister abducting extraterrestrials, or by Chemtrail poisoning. So the speakers endlessly repeated claims of one conspiracy or another—government conspiracies, extraterrestrial conspiracies, medical conspiracies, etc., and if two or more of these conspiracy theories contradict each other, so much the better as it just shows the profundity of the phenomena they are confronting.

Getting into the paranoid spirit, I decided to attend dressed as a Man In Black: black shirt, pants, socks and shoes, a black necktie, and a big black Western hat. When I first appeared I drew more amazed, wide-eyed stares than I'd ever seen before in my life. One fellow who worked for the convention finally got up the courage to ask me, "So are you one of those Men In Black?" I replied, "Sorry, I'm not at liberty to discuss that." I expected that he'd laugh, and then I was going to introduce myself. Instead he made a knowing gesture, and moved away. The MIB are taken very seriously by this crowd.

The first speaker I heard was the research astronomer Rudy Schild. He was careful not to specify his affiliation, but a Google search shows him to be at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. I was hoping that perhaps he had

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

been invited by the conference organizers to be the solitary voice of reason in a sea of uncritical claims. My hopes were disappointed. According to the program, "Dr. Schild describes how the phenomena reported for UFOs and alien abductions seem to be describing an important element in the universe that Einstein evidently overlooked." Actually, his talk was much wilder than that. After beginning with an uncontroversial overview of recent cosmological discoveries, Schild told the audience that he was taking off his "science hat," and putting on his "UFO hat." Gone were photos of galaxies and gravitational lenses, replaced by a crude drawing of ETs floating inside a saucer. Schild went on to explain his theory of how the alien pilots are actually "controllers," who use their "community communication," or telepathy, to set up oscillations in the ship's power supply, which is a "plasma." At the bottom of the saucer, the source of its brilliant light is a "crystal." The crystal amplifies the oscillations in the plasma, set up by the group telepathy of the ETs. (It all seems so obvious I was wondering why I hadn't thought of it.) Schild cautioned, however, that not all of the objects we see are actual UFOs. Some of them are simply "projections" in the "quantum hologram" that surrounds us. This is possible because Einstein's four-dimensional universe is "co-spatial" with the "frequency space" used by the ETs.

Moving beyond UFOs, Schild discussed the phenomenon of Near-Death Experiences (NDEs). He says NDEs indicate that it is possible to travel to "the center of the universe," which is "where God is," and back in just twenty minutes, probably using "wormholes." He speculated that ETs have learned how to manipulate the "Higgs boson," which allows them to control gravity and levitate abductees. It occurred to me that with the death of John Mack last year, Harvard had lost its most prominent out-on-a-limb UFOlogist. As if by some principle of Conservation of Academic Absurdity, Mack now has a worthy replacement.

Simon Hein and Ron Russell gave a rather boring and repetitive talk on "Resonant Viewing." That is supposed to be the new name for what used to be called "remote viewing." Hein did most of the talking. However, a comment about their Web site (www.resonantviewing.org) suggests that the name change may have been motivated by the fact that all of the "remote viewing" domains had already been registered. Whether "resonant" or "remote," the viewer tries to receive an extrasensory impression of a hidden image, allegedly using resonant frequency vibrations. This has something to do with crystals. Hein described many claimed "hits," but somehow forgot to mention even a single case where the "resonant viewer" missed. He apparently defines a viewing session as a "hit" if any accurate information was stated, no matter how much else the viewer may have gotten wrong. Just make a whole lot of guesses, and you, too, can become a successful "resonant viewer."

The most popular conspiracy claims at the conference had nothing to do with UFOs, but with the alleged hidden government conspiracies involving the September 11, 2001, attacks. Various speakers and books being sold blamed the Bush family for planning the attacks, or the Neo-con cabal, the CIA, or else the Israelis: just about anyone except Islamic religious fanatics. Jim Marrs knows how to milk a good conspiracy when he sees one. Previously, his books have "uncovered" a JFK assassination conspiracy, "PSI Spies," and the "Alien Agenda" of extraterrestrials living in our midst. His newest book is titled *Inside Job: Unmasking the 9/11 Conspiracies.* One proof of the government's supposed lack of interest in capturing Osama bin Laden was its rebuff of an offer by a "military remote viewer" to help track him down.

According to Marrs, the World Trade Center's principal leaseholder, Larry Silverstein, was unable in 2000 to sell out his interest in the towers, so instead he took out insurance against a terrorist attack. The conspirators needed to detonate the South Tower first, to maintain the cover story about hijacked airplanes bringing them down. They may have used a micro-nuke, as was used to bring down the Murrah Building in Oklahoma City in 1995. Just as Marrs was explaining to the breathless crowd about the airplane that didn't crash into the Pentagon, somebody tripped the fire alarm, and the hall was briefly evacuated. Apparently some dastardly plotter will stop at nothing to prevent the truth from getting out! Finally, Marrs was able to resume, and proceeded to name the number one leader of the conspiracies: none other than Vice President Dick Cheney, who must have spent his first few months in office planting bombs and triggering fire alarms, while cleverly making us think that he was in the hospital. Marrs closed his talk with a stern warning against ever getting another vaccination for anything—but that's a whole different conspiracy schtick.

Sean David Morton is a TV writer, director, and producer, whose proudest claim to fame was his discovery in 1989 of a giant underground UFO-related military base beneath the Dulce Archelata Mesa on Apache land in northern New Mexico. He spoke about what we can learn about the future of the world by studying the Bible code (hidden messages allegedly embedded within the Bible).

Morton spoke very quickly, making it difficult to comprehend the significance, if any, to what he was saying. Of course he has found another conspiracy. The current phase he has labeled "Phase I," or "The Tribulation," running from 2005–2012. (All of the paranormal conspiracists agree that *something* cosmic is supposed to happen in 2012, but they cannot agree on what it is or whether it's good or bad.) The worst villain of this part of the conspiracy seems to be Clear Channel Radio, which is greedily buying up stations, and even canceling paranormal-related programs. This phase of the conspiracy does not seem very frightening to me, but then I am not a producer of UFO-related entertainment. But wait until Phase II starts! America will become the "new Holy Land," with its capital in Denver, and all that Apocalypse stuff is going to get started. This can all be found in Bible codes, if only you look hard enough. Not only that, but between now and 2012 there will be lots of storms and magnetic disturbances. Our serotonin will increase, and link us chemically to the Ascension that is coming when the Mayan Calendar expires.

On the downside, Phase II will of course be marked by the rise of the Anti-Christ himself. And Morton is able to name the Anti-Christ a full seven years before the beginning of his terrifying reign of evil. It is none other than Michael Chertoff, recently sworn in as Director of Homeland Security. Now I've got to admit that even I thought Chertoff looked a little ragged and devilish when speaking to the press, but probably a visit to Bill Clinton's hairdresser would end speculation about his qualifications to be the Anti-Christ.

Michael Salla, whose earlier comments about the "exopolitics" between President Eisenhower and extraterrestrials got him in academic hot water ("Psychic Vibrations," November/December 2004), gave a very bizarre talk about the supposed Nazi-ET connection. Hitler's SS, you see, "may have" established contact with extraterrestrials, using mediums trained by esoteric secret societies like Thule and Vril. They also may have retrieved one or more crashed saucers that apparently went down in the Black Forest. Salla's idea of "research" is to read wildly speculative books about UFOs whose authors present no facts whatsoever, and to footnote them scrupulously.

The Nazis apparently established contact with tall, blonde, blue-eyed extraterrestrials, who hail from Aldebaran. Lucky for them they found the Aryan Aliens first, as one shudders to think how the Nazis would have treated today's four-foot greys. The Nazis employed alien technology to build flying saucers. However, they were not able to employ these wonder-weapons before the end of the war, so as the Reich was crumbling they redeployed their ET-derived technology to secret bases in Antarctica, and possibly on the Moon (which may, by the way, be artificial), and on Mars, as well. The exiled Nazis are now said to be in full cooperation with advanced extraterrestrials, and thirsting for re-conquest. I think Salla has been reading too many comic books.

Dr. Len Horowitz (he usually deletes the letters "D.D.S." from his title) is a high-energy motivational speaker whose spiel is so confusing that when you walk out you know you've just heard something brilliant, even if you have no idea what it meant. Horowitz began modestly

SKEPTICAL INQUIRER's Man in Black, Robert Sheaffer.

by attempting to explain the "bio-holographic field of divinity." This involves consulting a Webster's dictionary. And not any other dictionary, either, because Noah Webster was a Freemason of the highest degree, and thus many Masonic secrets are embedded within it (think of the dictionary as the *Da Webster Code*), plus a rich helping of Bible codes as well. (Horowitz is apparently unaware that the dictionary name *Webster's* is actually public domain, and several publishers have issued different Webster's dictionaries that were not written by Noah Webster. The only dictionary directly derived from Webster's original 1841 dictionary is Merriam-Webster's.) Horowitz was pitching his new book titled *Healing Codes for the Biological Apocalypse*, which has something to do with getting your DNA in harmony with the divine healing frequencies concealed in Bible codes. We need this kind of linguistic guidance, because English is a language that had been derived from the original Hebrew for the purpose of dumbing us down (and if anybody takes that seriously, it proves that the linguistic plot has succeeded). The numerological value of the letter X is 6, as is that of the letter O, so that the seemingly innocent game of tic-tac-toe fills up the board with "666." And worse yet, when the British Union Jack is quartered and rotated 90 degrees, it becomes a swastika. Oh, dastardly cunning, this plot!

But Len is up to the task of unraveling it. Clues abound in many places, most especially in the murals of the new Denver Airport, in which the conspirators have carelessly revealed the workings of their plans for all to see. His detailed org chart of the conspiracy reveals not just the usual suspects like the president, the FBI, and CIA, but even the dreaded American Home Products—a vast wing-nut conspiracy apparently for the suppression of the Electromagnetic Frequency Matrix of the Kingdom of Heaven. Getting right down to business, Horowitz explained how cancer cells are really just cells that are in "spiritual crisis." Cancer can be cured by drinking "sacred geometric water" (water that has been prayed over), water that has been "structured" by having friendly words written on the outside of the jar (also seen in the film *What the Bleep Do We Know?*), and by a commercial product that he happens to recommend.

There was some discussion about UFOs here and there, mostly about supposed UFO abductees. Hypnotherapist Barbara Lamb (who was seen in the Alien Abductions segment of Penn and Teller's TV show *Bullshit!*) conducted several sessions with "experiencers" claiming to have been abducted by ETs. The general theme of the sessions was: your experience is valid for you, and if you think you might have been abducted by aliens, then you probably were.

Next year's UFO Congress really ought to be re-named the *UFO and Conspiracy Congress*, but I doubt that it will. For UFOlogists are engaged in a little conspiracy of their own—to prevent the public from finding out how totally whacked-out bizarre the "science" of UFOlogy has now become. □

Seeking a Sixth Sense

Following the December 26, 2004, Asian tsunami, many media reports said that animals and aboriginal tribesmen somehow sensed the impending danger and fled to higher ground. Any truth to that?

—C. Coles

This claim appeared in many places shortly after the tragedy, in forms such as: "No dead animals have been found as a result of the tsunami, confiming animals' sixth sense" and "no one has found dead animals in the aftermath of the earthquake and tsunami."[1] These reports are simply incorrect. Several news and eyewitness accounts described dead animals among the debris and carnage. *The Washington* Post, for example, reported that "In the coastal town of Velanganni . . . volunteers wearing face masks drove around in trucks Tuesday, picking up cattle carcasses . . .";[2] on January 4, Miranda Leitsinger of the Associated Press noted that "In India, the Blue Cross [reported] that thousands of dead animals lined beaches after the tsunami struck."[3]

So dead animals *were* found—but in surprisingly few numbers? To begin with, it's unclear how many animals would be expected to have been killed by the tsunami, since coastal regions don't necessarily have a high concentration of large animals to begin with, and many non-domesticated animals can fly or climb trees to avoid drowning. It's also likely that survivors were more concerned with the loss of human lives and working animals than they were with searching for missing wild animals. But for the sake of argument, let's say that fewer animals were killed than some might have expected. Is this evidence of a paranormal "sixth sense"?

The fact that animals have keener senses than humans is obvious and well-documented. Dogs have a remarkable sense of smell, birds can migrate using celestial cues, and bats can locate food with echoes. Animals may sense unusual vibrations or changes in air pressure coming from one direction that suggest they should move in the opposite direction. Let's say a herd of animals are seen fleeing to higher ground. All that is needed is for one or two of them to skittishly sense danger and head out; the rest will follow, not necessarily due to some preternatural sense but simple herd instinct.

Similarly, members of primitive tribes who inhabit the Andaman and Nicobar Islands are said to have been forewarned: "They can smell the wind. They can gauge the depth of the sea with the sound of their oars. They have a sixth sense which we don't possess."[4] (The "sixth sense" label is a bit of a myth anyway, since the human body has other senses, such as balance and pressure, that are not counted in the usual five.) As with the animals, one needn't posit a mysterious sixth sense; the other five are more than capable of warning about impending danger. The fact that an ancient seafaring people (as opposed to, say, German tourists on holiday) might recognize the signs of an impending tsunami is hardly surprising.

This topic touches on interesting elements, including an implicit "ancient wisdom/noble savage" theme and the role of non-conscious cues (intuition, or "knowing more than we think we know"). For more on intuition, see Joe Nickell's column in the March/April 2005 issue of SKEPTICAL INQUIRER.

Benjamin Radford is managing editor of the SKEPTICAL INQUIRER; his first book, co-authored with Bob Bartholomew, was Hoaxes, Myths, and Manias: Why We Need Critical Thinking.

Notes

1. See www.crystalinks.com/tsunami1204a.html.
2. Lakshmi, Rama. 2004. After sea surges, water could kill in other ways. *The Washington Post*, December 29; Page A11.
3. See www.enn.com/today.html?id=6865.
4. See www.nativeamericanchurch.com/Signs/SixthSenseTsunami.html. □

Ask the Skeptic

Wondering whatever happened to red mercury or Uri Geller? Heard about some dubious paranormal or fringe-science claim? Ask the skeptic! Submissions can be sent to: **The Skeptical Inquiree, *Skeptical Inquirer*, P.O. Box 703, Amherst NY 14226** (or **bradford@centerforinquiry.net**). Not all queries can be answered, and submissions may be edited for clarity and length.

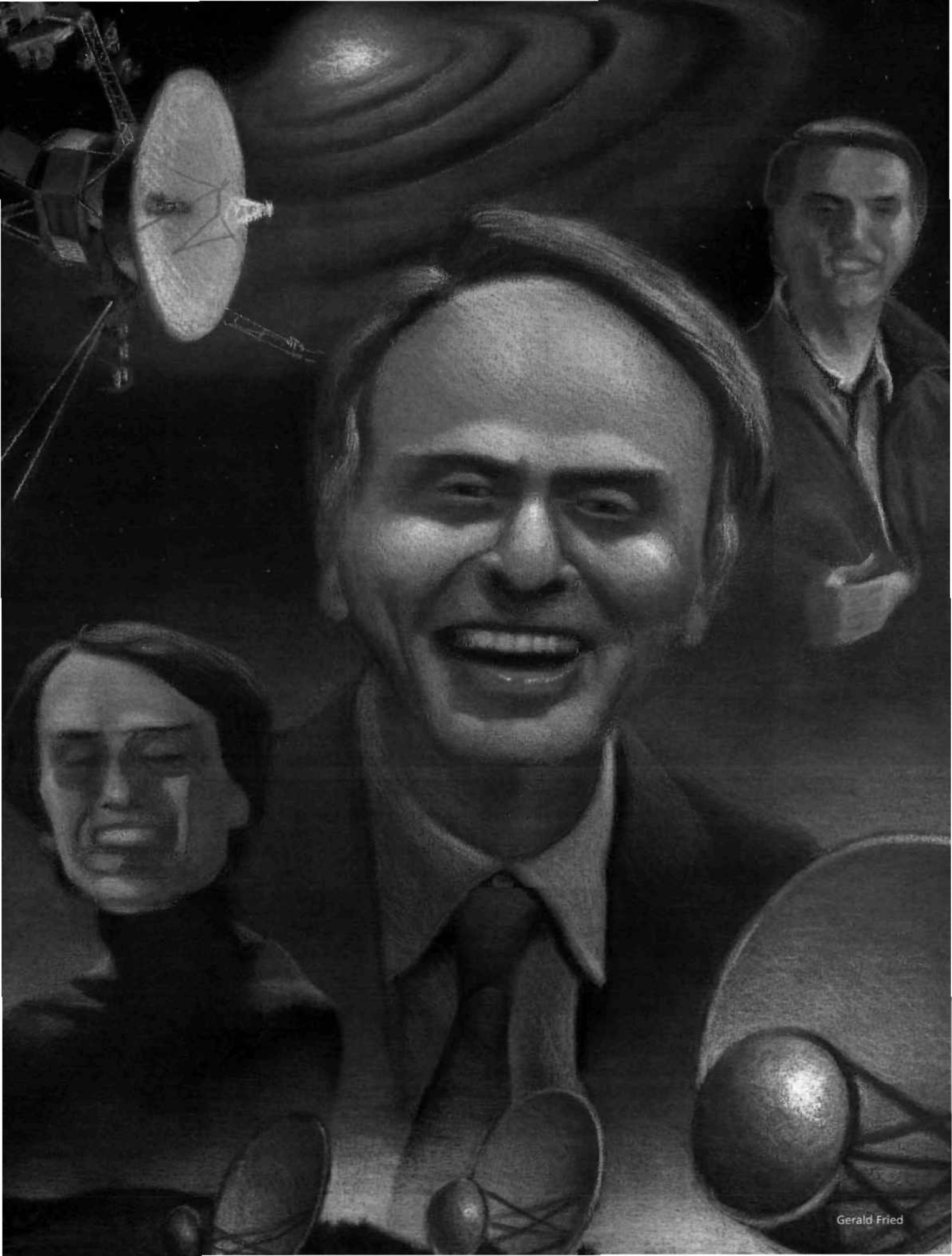
Carl Sagan Takes Questions

More From His 'Wonder and Skepticism' CSICOP 1994 Keynote

When Carl Sagan delivered his keynote address "Wonder and Skepticism" before a large audience at the CSICOP Conference in Seattle, Washington, June 23–26, 1994, a lively question-and-answer session followed. We published Sagan's adaption of his talk as the cover article in the first bimonthly, magazine-format issue of the SKEPTICAL INQUIRER, *January/February 1995. (We republished it after Sagan's December 1996 death as the lead chapter in the last of four general SI anthologies I edited,* Encounters with the Paranormal: Science, Knowledge, and Belief, *Prometheus 1998, with my two-page epilogue.) The Q/A session had been transcribed at the time along with the talk but put away and never published. A few months ago it was relocated, and Carl's wife and collaborator, Ann Druyan, readily agreed that it should be published in the* SKEPTICAL INQUIRER. *It appears here, with omission of only a few nonsubstantive exchanges. If some of the specifics discussed seem dated, others are as topical as today's news. And the general themes remain current. We then publish on page 37 a passionately felt postscript, "The Great Turning Away," written specially for this issue by Ann Druyan.* —KENDRICK FRAZIER, Editor

QUESTION: Dr. Sagan, you mentioned in your talk that one of the most important functions in science is to reward those who disprove our most closely held beliefs. Sir, if you were to look ahead two or three or four generations, which of our most closely held beliefs today do you think are the most likely candidates for disproof?

SAGAN: Maybe the belief that challenges our most closely held beliefs. Prophecy is a lost art. I have no way of doing that. If I could do that, think of the enormous effort we could save. The question flies in the very face of what I was just saying about how the most obvious points, the things we're absolutely sure of, may turn out to be wrong. So I am not immune to that fallibility and frailty. Let me give


Gerald Fried

another example. It's the middle of the nineteenth century. The leading futurologist—although the word didn't exist then; it's a terrible word—was Jules Verne. He was asked to project a century ahead. What would be the means of transportation, the most exotic means of transportation, in the middle of the twentieth century? He then did whatever he did, looked into his crystal ball metaphorically speaking, and then gave the following conclusion: by 1950 there would be Victorian living rooms with lots of red velvet plush, I imagine, in the gondolas of great airships (they were called, but essentially dirigibles) which would cross the Atlantic Ocean in no more than a week. And people said, "Whew! That Jules Verne, he sure is far-seeing. Who could have thought of that?"And he was grossly off. Why was he off? Was he stupid? Was he not a good futurologist? No. He didn't foresee heavier-than-air aircraft, nor did anybody else. The view in the middle of the nineteenth century was that it was impossible. And in just the same way, whatever I would tell you, where we would be in space or something like that, is bound to be, unless we destroy ourselves, overtaken by scientific ideas and technological developments that I haven't a ghost of a chance of foreseeing. So forgive me for not being able to answer your question.

QUESTION: Thank you for your talk. I just wanted to challenge the idea that the reward system in science is essentially different from any other system. A person who successfully challenges the emperor gets the greatest rewards. An entrepreneur who successfully displaces some other technology or some other entrepreneur gets the greatest rewards. And a scientist who fails to successfully challenge the head of his discipline can see his head rolling, professionally, just as quickly, I think, as the unsuccessful coup d'etat. Thank you.

SAGAN: Thank you. I think you raise a good point; permit me to disagree. There are certainly similarities along the lines that you say and, for example, maybe you remember the novel and television series, *Shogun*, in which the English sailor, washed ashore in Japan, is brought to meet Tokanaga, the future Shogun, who is very autocratic and authoritarian, hierarchical, as of course all military leaders are. And when he discovers that the Dutch were revolting from their Spanish overlords, he immediately identifies with the Spanish. He never met a Spaniard in his life, but they were in charge, and anybody challenging them must be doing something wrong. The hero then says, "The only mitigating condition is that the upstarts win." And Tokanaga says "Yes, yes, very true," and then they are friends. That's the point you just made. But that doesn't mean that there's a reward structure that encouraged the Dutch to revolt against the Spanish. It just means that if they succeed, then they succeed. It's a tautology. Whereas in science, there is a reward structure from the beginning. It doesn't mean that if somebody challenges Newton he is immediately rewarded. Einstein had some difficulties with special relativity. His Nobel prize was not even for relativity, it was for the photoelectric effect, because relativity was considered to be worrisome. Nevertheless, there were many scientists who recognized the value of what Einstein said. He was not challenging Isaac Newton; Isaac Newton was dead. The value of what Einstein said was there plain for anyone to see; nobody had thought of it before. As soon as people had worked through the arguments on the idea that simultaneity was a nonsensical idea, many were converted on the spot. I don't say that everybody was; I don't say that there weren't some problems with it, but there is a reward structure built in. And Einstein, just a few years after his 1905 relativity paper, was Full Professor and at the top of his profession.

The value of what Einstein said was there plain for anyone to see; nobody had thought of it before. As soon as people had worked through the arguments on the idea that simultaneity was a nonsensical idea, many were converted on the spot.

QUESTION: Did you really say billions and billions of — (Laughter)

SAGAN: Never. Johnny Carson said it. I once saw him put on a wig and a corduroy jacket and pretend to be me, but I no more said it than Sherlock Holmes, in any of the writings of Arthur Conan Doyle, said "Elementary, my dear Watson."

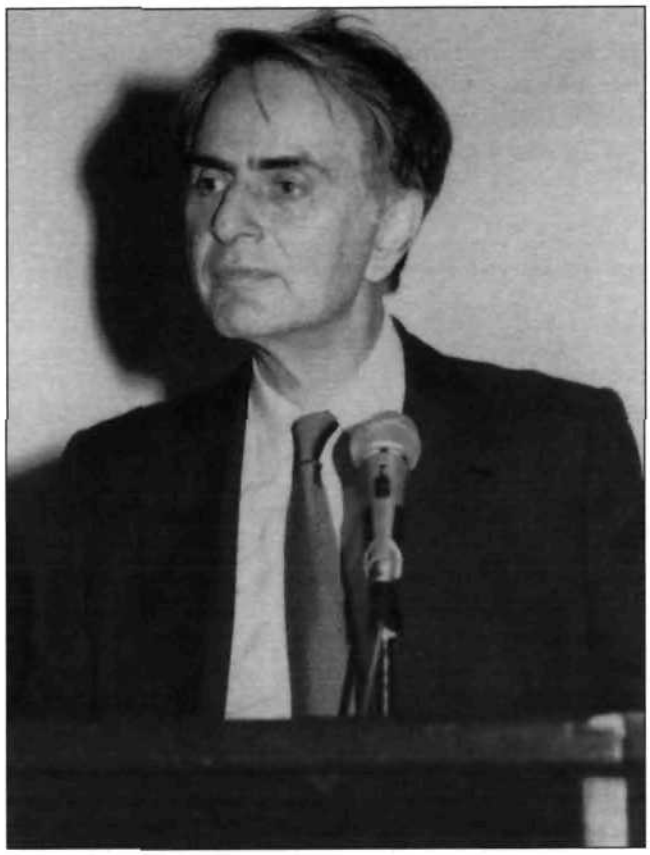
QUESTION: I find it a little surprising that you use the words "science"and "truth"together in the same sentence. You said that science doesn't seek absolute truths, but asympomatically tries to approach truth. I find truth is something that is very anthropocentric, relative to human being at a given time and a given place. I usually think of science more as seeking asymptomatically a better understanding of reality, not of truth.

SAGAN: I won't quibble on words. There are as many people who argue about the existence of reality as about the existence of truth. I encourage them to debate each other. (Laughter)

QUESTION: If I understand the theory of relativity, the space/time viewpoint, a causal violation should not be able to create a paradox. Do you think we may ever have as much control over space/time geometry as we do over electricity?

SAGAN: That's an awfully good question and I don't know the answer. But yes, a topic that is being hotly debated these days in the gravitational physics community is whether producing a paradox is a contradiction, or whether a paradox of the sort you referred to is just something we are going to have to live with. Can effects precede causes, for example. We have

a tendency just to throw up our hands in amazement and despair: "What are you talking about? It's nonsense!" But there are certain sciences that seem to be in a funny way internally consistent with what else we know about physics and which may say effect can precede causes. I don't guarantee it's true, but if it is true it's just another one of those cases where our common sense doesn't apply everywhere.



Carl Sagan takes questions at his CSICOP keynote address in Seattle, Washington, on June 26, 1994.

QUESTION: Richard Hoagland has recently got hold of some pictures, Hasselblad pictures from NASA, which were taken some twenty years ago of the moon, and he has been describing those in great detail. He gave a talk at Ohio State University a couple of weeks ago and he had video cameras on and they were supposed to have videos available. I wonder if you've heard about this and had previous knowledge of . . . .

SAGAN: You forgot to mention what is on those videos.

QUESTION: Structures on the moon.

SAGAN: Richard Hoagland is a fabulist. By the way, it's not difficult getting hold of the hand-held Hasselblad camera pictures; NASA freely releases them to everybody. These are in the public domain, they're available to anybody. You don't have to do something remarkable to get the pictures. The aspect of this story I know best has to do with the so-called Face on Mars. There is a place on Mars called Sidonia, which was photographed in a mission I was deeply involved in, the Viking mission to Mars in 1976. And there is one picture in which along a range of hulking mesas and hillocks, there is what looks very much like a face, about three kilometers across at the base and a kilometer high. It's flat on the ground, looking up. It has a helmet or a hair-do, depending on how you look at it, it has a nose, a forehead, one eye—the other half is in shadow—pretty eerie looking. You could almost imagine it was done by Praxiteles on a monumental scale. And this gentleman deduces from this that there was a race of ancient Martians. He has dated them, he purports to have deduced when they were around, and it was 500,000 years ago or something like that, when our ancestors were certainly not able to do space flights, and then all sorts of wonderful conclusions are deduced and "we came from Mars"or "guys from other star systems came here and left a statue on Mars and left some of them on Earth." By the way, all of which fails to explain how it is that humans share 99.6 percent of their active genes with chimpanzees. If we were just dropped here, how come we're so closely related to them? What is the basis of the argument? How good is it? My standard way of approaching this is to point out that there is an eggplant that looks exactly like former President Richard Nixon. The eggplant has this ski nose and, "that's Richard Nixon, I'd know him anywhere."

What shall we deduce from this eggplant phenomenon? Extraterrestrials messing with our eggplants? A miracle? God is talking to us through the eggplant? Or, that there have been tens, hundreds of thousands, millions of eggplants in history, and they all have funny little knobs, and every now and then there is going to be one that by accident looks like a human face. Humans are very good at recognizing human faces. I think clearly the latter. Now let's go to Mars. Thousands of low, hilly mesas have all sorts of features. Here's one that looks a little like a human face. When you bring out the contrast in the shadowed area it doesn't look as good. Now, we're very good at picking out human faces. We have so many of these blocky mesas. Is it really a compelling sign of extraterrestrial intelligence that there's one that looks a little like a human face? I think not. But I don't blame people who are going into the NASA archives and trying to find things there; that is in the scientific spirit. I don't blame people who are trying to find signs of extraterrestrial intelligence—I think it's a good idea, in fact. But I do object to people who consider shoddy and insufficient evidence as compelling.

QUESTION: May we hear your opinion on the canceling of the Superconducting Supercollider in Texas?

SAGAN: Yes. There are many physicists who think that that latter was a great tragedy. My own view is that it was not nearly explained well enough. We're talking about eight, ten, twelve, fourteen billion dollars to do very arcane experiments—and I don't think physicists did a good job at all in explaining to Congress why at a time of many pressures on the discretionary federal budget so much money should go to this. It doesn't build weapons, it doesn't cure diseases, it isn't generally known or understood. What is it about and why should we spend money on it? I think the physicists have, not altogether but to a significant degree, themselves to blame.

QUESTION: A question concerning the search for extraterrestrial intelligence. It seems that we as skeptics, there's

an argument that seems very disappointing and maybe a bit persuasive in the Fermi paradox, the idea that if civilizations were to arise at any significant level, that even given a very extremely slow rate of expansion in the galaxy, that there's been more than enough time for them to have populated the galaxy several times over. What's your view on the Fermi paradox?

SAGAN: The Fermi paradox essentially says, as you said, that if there's extraterrestrial high technology intelligence anywhere they should have been here because if they travel at the speed of light, the galaxy is 100,000 light-years across, it takes you *100,000* years to cross the galaxy. The galaxy is *10* billion years old, they should be here. And if you say you can't travel at the speed of light, take a tenth of the speed of light, a hundredth of the speed of light, still much less than the age of the galaxy. William Newman and I published a paper on this very point, in which we point out: Imagine there is a civilization that has capable interstellar spacecraft and now they start exploring. What are we talking about? That they're sending out 400 billion spacecraft, all at once, simultaneously, to every star in the galaxy? Not at all. Interstellar space flight is going to be hard, you're going to go slow, you're going to go to the nearest star systems first, you're going to explore those stars. It is not a straight line but a diffusion question. And when you do the diffusion physics with the appropriate diffusivity, that is, the time to random walk, there are many cases in which the time for an advanced civilization to fully explore the galaxy in the sense of visiting every star system is considerably longer than the age of the galaxy. It's just a bad model, we claim, the straight line, dedicated exploration of every star in the galaxy.

QUESTION: Dr. Sagan, you've spoken about the need to, as you say, be defenders of science, or to spread the wonders of science and the value of science among those who are perhaps less well educated or have less of an appreciation of it. It seems to be quite a challenge, and I was wondering, in particular, there are many people, of course, plus the people in this room, perhaps a fairly large portion have some background in science. Amongst people who have what is called a liberal education, who may be in the arts or in the humanities, science has among many of them something of a bad name. I wonder if you have any thought on what path might be taken to remedy that situation.

SAGAN: I think one, perhaps, is to present science as it is, as something dazzling, as something tremendously exciting, as something eliciting feelings of reverence and awe, as something that our lives depend on. If it isn't presented that way, if it's presented in very dull textbook fashion, then of course people will be turned off. If the chemistry teacher is the basketball coach, if the school boards are unable to get support for the new school bond issue, if teachers' salaries, especially in science, are very low, if very little is demanded of our students in terms of homework and original class time, if virtually every newspaper in the country has a daily astrology column and hardly any of them has a weekly science column, if the Sunday morning pundit shows never discuss science, if every one of the commercial television networks has somebody designated as a science reporter but he (it's always he) never presents any science, it's all technology and medicine, if an intelligent remark on science has never been uttered in living memory by a President of the United States, if in all of television there are no action-adventure series in which the hero or heroine is someone devoted to finding out how the universe works, if spiffy jackets attractive to the opposite sex are given to students who do well in football, basketball, and baseball but none in chemistry, physics, and mathematics, if we do all of that, then it is not surprising that a lot of people come out of the American educational system turned off, or having never experienced, science. That was a very long sentence.

QUESTION: Good evening, Dr. Sagan. Just one point first. Both the Canadian Broadcasting Corporation and the CTV private network have female science reporters.

SAGAN: Excellent. I was only talking about the U.S. and I recognize that you are within range of Canadian broadcasting here in Seattle.

SAME QUESTIONER: I'm a Canadian myself.

SAGAN: I'm very glad to hear it. David Suzuki has done for many years an excellent job on Canadian television.

SAME QUESTIONER: Absolutely. With the debacle of cold fusion, which may be said to be the ultimate proof of the scientific method with its peer review and its replicability or lack of same, if you were a person who is interested in the question of developing energy sources that would be both safer than the ones we use now and less expensive, would you continue to work in the area of fusion, and if not where would you work?

SAGAN: Cold fusion or hot fusion?

SAME QUESTION: I understand that hot fusion takes up a lot more energy than it ultimately produces.

SAGAN: But the margin is shrinking. If it were up to me, there's nothing in the way of compelling evidence for cold fusion, but if there were such a thing as cold fusion—you know, desktop conversion into enormous energy—we need that. So I can understand why there are companies, especially abroad, that are devoting small resources to it. I don't think that's cause for apoplexy. It'll probably come to nothing, but if there are scientists who want to spend their time on that, let them do it. Maybe they'll find something else that's interesting. On hot fusion, the margin, as I said, is shrinking, but the predicted, even optimistic estimates when commercial, large-scale, worldwide hot fusion would be available is too far into the twenty-first century to solve the energy problems we have today.

The energy problems I'm talking about are in particular global warming, the burning of fossil fuels. So what I would encourage is first of all, much greater emphasis on efficient use of fossil fuels—fluorescent rather than incandescent bulbs, you save a factor of several, or to put it another way, with the same amount of photons you put three or four or five times fewer carbon dioxide molecules into the atmosphere from the coal-burning power plant that provides the electricity. And I would put the money into forcing the automobile companies to produce cars that get 75, 85, 95 miles a gallon. Why are we satisfied with 25 miles a gallon when it is commercially perfectly possible to have safe, quick acceleration, spunky-looking cars

that are efficient in their burning of petroleum? And then the other area where I would put emphasis is in non-nuclear alternatives to fossil fuel, of which I would stress biomass conversion, solar-electric power, and wind turbines, all of which are technologies that are coming along very swiftly despite, until recently, real hostility in the U.S. government. Let me give you just one political story. There was once a president of the United States recently in the news named Jimmy Carter. He thought that there was an energy problem and he gave, in effect, talks to the nation in his cardigan sweater saying about how you should save electricity. He put into the roof of the White House a solar thermal converter which circulated cold water to the roof, and on sunny days in Washington sunlight heated this water and in repeated passes it made it very hot, and when it was time for a Presidential shower, here was hot water that did not rely on a power plant. He was succeeded by a President named Ronald Reagan. One of the first acts in office of President Reagan was to rip out the solar thermal converter from the roof of the White House at considerable cost—after all, it was in there and working—because he was ideologically opposed to alternatives to fossil fuels. We lost twelve years in research into these alternatives during the Reagan-Bush administration.

I know of no evidence that women and racial minorities are not as competent as anybody else in doing science. It has to do, I think, entirely, or almost entirely, with the built-in biases and prejudices of the educational system and the way the society trains people.

QUESTION: The dapper gentleman there, Bill Nye, his work on television bodes well for science education; he's to be applauded. I also want to thank you for answering all my questions about Richard Nixon; it explains a lot. You expressed some encouragement about the age mixture represented here in this audience. I wonder if you would comment on the conspicuous lack of racial diversity and the implications for science education in general.

SAGAN: Thank you. We also might ask how it is that of the first ten or twelve questioners only one was a woman in an audience in which women are much more strongly represented. These are wide-ranging, difficult questions. I don't claim to have the answers except to say that I know of no evidence that women and what in the United States are called racial minorities are not as competent as anybody else in doing science. It has to do, I think, entirely, or almost entirely, with the built-in biases and prejudices of the educational system and the way the society trains people. Nothing more than that. Women, for example, who are told that they're too stupid for science, that science isn't for them, that science is a male thing, are turned off. And women who despite that try to go into science and then find hostility from the high school math teacher—"What are you doing in my class?"—find hostility from the 95 percent male science classes, with the kind of raucous male culture in which they find themselves excluded, those are powerful social pressures to leave science. It is amazing that there are any women in science as a result of this. I wrote a novel once, *Contact*, in which I tried to describe what women dedicated to science have to face, that men don't, in order to make a career in science.

QUESTIONER: I would like to challenge you to answer the questions without ridicule....

SAGAN: Fire away.

SAME QUESTIONER: ...whether they be about crop circles, Richard Hoagland, or the abductees.

SAGAN: I didn't think I had any ridicule there.

SAME QUESTIONER: I think you had quite a lot. I was quite offended.

SAGAN: Which one particularly?

SAME QUESTIONER: The crop circles, the jokes you started with, the answer about Richard Hoagland offended me.

SAGAN: Okay, let's take one. Let's take Richard Hoagland —

SAME QUESTIONER: I would like to ask you in general to watch the ridicule. There are so many people here that think such ideas are worthy of ridicule. You have spoken about the need for compassion. I would like to see you model that here.

SAGAN: I appreciate that remark, and if I had not done what I preached I apologize. However, you must recognize —

SAME QUESTIONER: I accept your apology.

SAGAN: There was an "if" in front of the apology: However, you must recognize that vigorous debate is an essential aspect of getting to the truth, and the fact that Mr. Hoagland, for example, is not here—unless he is somewhere—I had nothing to do with it. Someone asked me a question about Richard Hoagland; I said what I thought. I happen to know that when Mr. Hoagland is asked questions and I'm not present, he says things about me, that I sometimes wish I had a chance to —

SAME QUESTIONER (interrupting): Are you capable of modeling him?

SAGAN: I don't understand the question. What do you mean "modeling?"

SAME QUESTIONER: Modeling. Modeling compassion.

SAGAN: I've known Richard Hoagland for many, many years. I think I have just the right measure of compassion. (Laughter)

QUESTIONER: After the lady's question I don't know if mine is appropriate. I was going to ask you: We have Scott Peck, psychiatrist, Dr. [Brian] Weiss, he wrote *Many Lives, Many Masters*, Dr. [John] Mack [the Harvard psychiatrist who

contended patients who say they were abducted by aliens are describing real events, and who spoke at the conference], we saw him yesterday, Dr. [Raymond] Moody—they're all mighty good thinkers. How do you think they went wrong?

SAGAN: I'm being asked to speculate offering psychiatric matters—hard to do. Some of those people I know very well, some I have never met. I don't think it would be right for me to guess why it is that they don't agree with me. I think that's all I want to say about it. I tried to stress before that it doesn't matter what the character of the debater is, it doesn't matter what reservations we have about him or her, what matters is the quality of the argument presented. For each of these people, I think the issue is: is there evidence? Yes, Dr. Moody has an M.D. but he uses, as I said, my own memories of my parents speaking to me as evidence of life after death. I know that's not a good argument. I know better than he what those voices are about, and so, by extrapolation, I think maybe the rest of his argument isn't so good. To the extent that I have some way of hooking onto the arguments I try to use what I know and see if there's a good case or not. I want to stress that there are some claims in the areas of parascience or pseudoscience that may well turn out to be right. And I don't think that is a reason for us not to demand the highest standards of argument about it.

For example, one thing I didn't mention to the last questioner: when Mars Observer was on its way to Mars with the high-resolution camera that might photograph things about the size of this, I thought that among the many other targets, it ought to take a look at the so-called face and settle the issue. If it's just some odd aspect of eolian abrasion on Mars, let's find that out. If it's something else, let's find that out. The fact that I think I understand, via the Richard Nixon eggplant, what the face on Mars is, doesn't mean that I don't want anyone to check it out. I could be wrong. If we have the tool to, with a few pictures, find out what the answer is, for heaven's sake let's do it. So each of these cases. In Johnny Mack's case I would say: "Never mind anecdotes, let's ask about physical evidence."

The claim is that many abductees have probes inserted up their nostrils, into their sinuses, which are, who knows, monitoring devices telling about where they've been and what's happening to their bodies. I say—and I've said to Mack a number of times—you give me one of those and we'll give it a really close scrutiny, and let's see if can we find evidence of alien manufacture. Are there principles of physical laws we don't understand? Are there isotopic ratios or the immiscibility of metals that we don't know about on Earth? Are there elements from the so-called island of stability, heavy elements, transuranic elements that are thought to be stable but we don't have any of them on Earth? There are many possibilities and you've certainly guessed that in some way an object of manufacture by aliens of extremely advanced capability—they travel from interstellar space, they effortlessly slither through walls, those guys really have powerful technology. Let's look at this. Never has there been one made available. There's always one about to be made available, there's always one that is going to be given to a laboratory, but it never happens.

What is that standard story that I get from Mack and others about the implants? It's that the abductees, going about his or her everyday life, and in many cases like this it is alleged the implant dropped out, clunk. The abductee picks it up, looks at it incuriously, and throws it in the garbage. Never once—and as a rule, this may prove my case—does he give it to some chemist or physicist, a chemist or physicist who could demonstrate the existence of alien technology. They'd give their eye teeth for that. They would be crawling all over each other to be able to examine the artifact. How come we've never had one case like that which really works out? I think that is a telling counterargument to all the anecdotal claims.

The claim is that many abductees have probes inserted up their nostrils, into their sinuses, which are, who knows, monitoring devices telling about where they've been and what's happening to their bodies.

QUESTION: Dr. Sagan, we are fourteen years into the AIDS epidemic, HIV epidemic right now in this country, and apparently scientifically we are not coming any closer to finding a cure, creating a vaccine, even though there's lots of money being expended. And apparently also now there are new superbugs or new strains of bacteria that are becoming resistant to many of the antibiotics. You spoke about a concern for your children and your grandchildren in terms of what's happening. I'm just curious; what implications you see with these newfound illnesses, viruses, that are all of a sudden coming to us who believe that we were conquering everything in this day and age.

SAGAN: This is natural selection in action. If we overdose ourselves with antibiotics, we wipe out all the microorganisms not resistant to antibiotics and preferentially amplify the ones that are resistant. Eventually we arrange things, very cleverly, so that the entire population of microorganisms inside our bodies—including the disease-causing ones—are resistant to antibiotics. So overdosing antibiotics, which physicians have done routinely for reasons that are not hard to understand, is a mistake. Part of the answer is of course not to overdose anymore, and also to develop new strains of antibiotics. There ought to be major efforts to do that. On AIDS, my impression is that while there is nothing like a vaccine or a cure, there are substantial advances in the molecular biology of the HIV virus, and I take that to be a sign of significant hope, but of course

not on the time scale of someone who is dying of AIDS. It's very slow in that respect. I don't think this is a money-driven situation. I don't think there just isn't enough money. I think there is enough money and some things maybe are not supported well enough, but in general there is, and it's a matter of not enough wisdom, not the right experiments, not having progressed far enough, not having done it swiftly enough. There's nothing magical about the HIV virus. It will succumb eventually to the ministrations of molecular biology. And I hope, for the reasons you mentioned, that that time will come soon.

QUESTION: Dr. Sagan, my question is in regard to the future of the skeptical movement.

SAGAN: Thank you. That's a good thing to end on.

SAME QUESTIONER: The responsibility that we have now, I feel, is as great as ever. The skeptical movement has been around for a number of years, perhaps thousands. First of all, I'd like to applaud the leadership of the skeptical movement we have here with you and the panel of speakers we have this weekend. But also important is the grassroots movements, the consensus of opinion of those that do adhere to the tenet, logic, reason, skeptical inquiry. We're at a point in time now that it's very important, and after having read the SKEPTICAL INQUIRER over a number of years and other articles and books and so forth, I find it somewhat amusing to see some of the investigations on a number of subjects like Paul Kurtz mentioned, we have hundreds of them—crystal power, pyramid power, a Loch Ness monster, whatever, I could go on and on. To be most effective in the long run I would think that would be something we would need to look at.

SAGAN: What would be?

SAME QUESTIONER: To be effective in fostering the logic and reason in skeptical thinking. I have found these various subject matters to be interesting and yet probably a greater area we could look at is the investigation into the major religions of the world.

SAGAN: Now we're to it. Okay.

SAME QUESTIONER: There are billions and billions of people that adhere to the tenets of these religions and I would imagine that we could spend more time in the skeptical movement—

SAGAN: In essence your question is: Should the skeptical movement devote some of its attention to religion?

SAME QUESTIONER: Well said.

SAGAN: This is a really good question, and I know that Richard Dawkins talked about this a year or so ago, and drew the conclusion that many religious beliefs were not noticeably different from any of the parasciences or pseudosciences beliefs, and why one of them is the object of our attention and the other is off-limits, and he urged that we be, if I may use the expression, more ecumenical in our hostility. I will answer in the following way: first, that there is no human culture without religion. That being the case, that immediately says that religion provides some essential meat, and if that's the case shouldn't we be a little careful about condemning something that it desperately needed? For example, if I am with someone who has just lost a loved one, I do not think it is appropriate for me to say, "You know, there's no scientific evidence for life after death." If that person is gaining some degree of support, stability, from the thought that the loved one has gone to heaven and that they will be joined after the person I'm talking to, himself or herself, dies. That would be uncompassionate and foolish. Science provides a great deal, but there are some things that it doesn't provide. Religion is an attempt to provide, whether truly or falsely, some solutions to those problems. Human mortality is one of those where there isn't a smidgeon of help from science. Yes, it's a grand and glorious universe, yes it's amazing to be part of it, yes we weren't alive before we were born (not much before we were born) so we hope we're alive after we're dead. We won't know about it. It's a big deal. But that's not too reassuring, at least to many people.

Science provides a great deal, but there are some things that it doesn't provide. Religion is an attempt to provide, whether truly or falsely, some solutions to those problems.

Take the issue of the Bible. The Bible is in my view a magnificent work of poetry, has some good history in it, has some good ethical and moral scriptures—but by no means everywhere, the book of Joshua is a horror, for example—and on those grounds is well worth our respect. But on the other hand, the Book of Genesis was written in the sixth century B.C. during the Babylonian captivity of the Jews. The Babylonians were the chief scientists of the time. The Jews picked up the best science available and put it in the book of Genesis, but we have learned something in the intervening two and a half millennia, and to believe in the literal truth of the attempted science in the Bible, is to believe too much. I know there are Biblical literalists who believe that every jot and tittle in the Bible is the direct word of God, given to a scrupulous and flawless stenographer, and with no attempt to use the understanding of the time, or metaphor or allegory, but just straight-out truth. I know there are people who think that. That seems to me highly unlikely. I think the way to approach the Bible is with some critical wits about us, but not dismissing it out of hand. There's a lot of good stuff in the Bible. Case-by-case basis is what I'm saying. Where religion does not pretend to do science, I think we should be open within the boundaries of good sense. I think that you cannot extract an "ought" from an "is,"and therefore science per se does not tell us how we should behave, although it can certainly shed considerable light on the consequences of alternative kinds of behavior. From that we can decide how to arrange our legal codes and

what to do. So the idea of an all-out attack on religion I think on many grounds would be foolish, but the idea of treating Biblical literalism, for example, with some skeptical scrutiny is an excellent idea. But it is being done, has been done for the last century by Biblical scholars themselves. I don't think there's any particular expertise in this movement for a critical examination of the Bible. There are other people who are doing it just fine.

I hope that sort of middle ground is not too different from what you were asking about, but I certainly don't think that religion should be off-limits. I don't think anything should be off limits. We should feel free to discuss and debate everything. That's what the Bill of Rights is about. And in that sense, and many other senses, the constitution of the United States, particularly the Bill of Rights, particularly the First Amendment, and the scientific method are very mutually supportive approaches to knowledge. Both of them recognize the extreme dangers of having to pay attention to and do whatever the authority says. □

The Great Turning Away

Ann Druyan

I vividly recall the Seattle CSICOP conference. It was my first visit to that beautiful city. Humanism seemed on the ascendant then. Science and reason had a remarkably effective champion in Carl Sagan, who was known and respected in every country on earth. At that conference we had no idea that Carl was ill and that Seattle was about to become our home for the next two years. Carl endured three bone marrow transplants at a cancer research hospital there before dying in that city in 1996.

How I miss that voice with its mesmerizing blend of passion, brilliance, warmth, humor, and honesty. Carl spoke and wrote with equal measures of skepticism and wonder; never one at the expense of the other. He managed to maintain an exquisite balance between these two competing values. His life's work to awaken us to the *wonders* of the universe revealed by rigorous, *skeptical* science was a joyful labor of love.

Here we are, a mere ten years later in a radically different cultural atmosphere. Now, we seem to be engaged in a great turning away from reality. The engine of science continues to churn out discoveries at an astonishing rate, and yet our culture seems to have lost the ability to translate these insights into a grander perspective. It's as if our first forays into the immensity of the universe have sent us flying into a panic. The dawning reality of our tiny portion of space and time has been too much for us to bear. We turn away, seeking refuge in the discredited myths of our centrality.

Evidence of this failure of nerve is plentiful: Public school science educators shrink from teaching the fundamentals of biology. Science museums in the South feel the need to shield their visitors from Imax films that give the true age of volcanoes. Our president declares himself an instrument of God and with impunity makes illegal and baseless unprovoked war. An unctuous piety suffuses every public utterance. Radical religious fundamentalists have seized the national conversation. The rest of us are left to re-fight battles and arguments won decades ago.

Most worrisome is the steady erosion of the Bill of Rights made acceptable by the fearful attacks of September 11, 2001. Our precious constitution is in danger of being tainted with religious-based homophobia, the so-called "defense of marriage" amendment. More and more frequently we are told that we live in a Christian country. In the frightening logic of this moment, the separation of church and state which was the founding source of our national genius is seen as nothing more than an obstacle to a proper commitment to God.

It's enough to make you long for the days when skeptics could afford the luxury of sparring with mild-mannered Harvard psychiatrists who claimed feebly that their patients had been abducted by aliens. And for countless reasons, I do. However, my overall sense about our future is cautiously optimistic.

My hunch is that we are living during the twilight of the magical thinking phase of human history. Lest you think this is mere faith, I offer some evidence: Consider all the futures depicted in science fiction that you have ever seen or read; *whether of life on this world or any other. How many of* them imagine a future in which the dominant religious traditions and beliefs of the present survive? Remember: This is the output of countless independent imaginations of every conceivable point of view. Yet, when we imagine the future, the gods of our childhood are long gone.

As the man said, "Prophecy is a lost art." And yet, I'm happy to venture one. I believe that new Carl Sagans will emerge to uplift us once again with the beauty and truth of natural reality. We will overcome our fears and turn back to look unflinchingly at the vastness. We will find our home in the cosmos. It is only a matter of time.

Ann Druyan, a CSICOP Fellow, is CEO of Cosmos Studios based in Ithaca, New York. She was Carl Sagan's wife and co-writer for twenty years until his death. Among their many collaborations were the motion picture Contact *and the book* Shadows of Forgotten Ancestors. *The twenty-fifth anniversary of their* Cosmos *television series will be observed this fall.*

How Do You Solve a Problem Like a (Fritjof) Capra?

Fritjof Capra's popular books purport to expound modern thinking in science by promoting "system thinking." Really, they are naïve and misleading, ignoring the success of detailed "mechanistic" explanations, especially in biology.

BURTON S. GUTTMAN

How do you solve a problem like a Capra?
How do you catch a cloud and pin it down?
How do you find a word that means a Capra?
A flibbertigibbet!
A will-o'-the-wisp!
A clown!
Many a thing you know you'd like to tell him,
Many a thing he ought to understand,
But how do you make him stay
And listen to what you say?
How do you keep a wave upon the sand?
Oh, how do you solve a problem like a Capra?
How do you hold Dr. Moonbeam in your hand?

With apologies to Oscar Hammerstein II

To add to our burden of pseudosciences such as astrology and homeopathy, we now have to contend with a brand of popular writing about science and the philosophy of science that I dub "Gee-whiz New Science." To explain it, I want to focus on its principal practitioner, one Fritjof Capra. Capra first came to public attention through his book *The Tao of Physics* (Capra 1975) in which he claimed that the theories and philosophy of modern physics, especially quantum mechanics, lend support to Eastern mysticism and religions such as Buddhism. For these ideas, he began to acquire a kind of cult following in the Age of Aquarius. The best response I know of to Capra was written by the physicist Jeremy Bernstein, which appeared originally in the Winter 1978–79 issue of *American Scholar* and was reprinted in his collection *Science Observed* (Bernstein 1982). Knowing how science operates, how its advances are so prone to error and constant revision, Bernstein commented, "In short, if I were an Eastern mystic the last thing in the world that I would want would be a reconciliation with modern science." He identified the heart of what is wrong with Capra's book as "Capra's methodology—his use of what seem to me to be accidental similarities of language as if these were somehow evidence of deeply rooted connections." It is this methodology, and the pseudoscientific preaching that comes out of it, that I examine here.

An illustration of Capra's inability to discern the meanings of words beyond their surface appearances comes from page 41 of his book *The Turning Point* (Capra 1982), where he begins, "It is now becoming apparent that overemphasis on the scientific method and on rational, analytic thinking has led to attitudes that are profoundly anti-ecological." "Rational thinking," he tells us, "is linear, whereas ecological awareness arises from an intuition of nonlinear systems. . . . Ecosystems sustain themselves in a dynamic balance based on cycles and fluctuations,

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which are nonlinear processes." Now, any good philosophy student can see what's wrong with this passage. In the first instance, Capra uses *linear* to mean discursive and analytical; in the second instance, he uses the word in its simple, mathematical sense, $f(x)=kx$. But never mind; to Capra it's all "linear," and being "linear" is bad. Regarding complex ecological systems, which entail some cyclical processes such as the carbon cycle and nitrogen cycle, Capra uses the same kind of language trick to say that one cannot think about cyclical systems by using linear thinking! That worries me. All through school, my teachers admonished me to learn to "think straight," and they particularly warned me about circular reasoning. Is Capra saying that they were all wrong and that the new way of thinking in science is to avoid straight thinking and to reason in circles?

The overall thrust of Capra's later books is to conduct a crusade, with himself riding bravely at its head, brandishing the sword of his version of a New Science. He would have us believe that he can frame a general viewpoint in biology—one can hardly call it a theory—that encompasses everything . . . .

The overall thrust of Capra's later books, including *The Turning Point* and *The Web of Life* (1996), is to conduct a crusade, with himself riding bravely at its head, brandishing the sword of his version of a New Science. One purpose of the crusade is, frankly, admirable: to lead humanity away from its currently devastating anti-ecological practices and toward a sustainable way of living. I will return later to this point and ask whether Capra's goal is worth the price we have to pay in terms of scientific rationality, because the crusade entails much more. Capra's intention, particularly in his latest book, is to show us that the standard contemporary ways of thinking about and doing biology are very, very old-fashioned and misguided. He would have us believe that he can frame a general viewpoint in biology—one can hardly call it a theory—that encompasses everything, from the most fundamental biological processes through the operation of the nervous system (and subsequently the mind-body relationship) and of ecological systems.

This is one of the most disturbing aspects of Capra's writing—the basic chutzpah of his undertaking. Some physicists have written about a "theory of everything" that will unify and make sense of all basic physical phenomena, but none are so bold—or foolish!—as to think that such a theory will also encompass all the phenomena of biology from cellular organization through ecology and even clarify the whole mind-body issue. And yet Capra boldly plunges ahead and tries to convince us that his worldview can do just this. It is a chutzpah that no serious working scientist would dare exhibit. But Capra tries to do it by explaining that X has a theory about this phenomenon and Y has a theory about that phenomenon, and X's and Y's theories have a vague similarity, so out of this vagueness, we can imagine that the two theories together can form a powerful theory of everything under the sun. I am reminded of the old logician's joke, "Each of these arguments by itself is invalid, but taken collectively they constitute an impressive body of evidence."

Much of Capra's writing is now focused on biology. He contends that mainstream biology is limited by being reductionistic and that a truly successful biology must use "systems theories." Capra's worldview may be characterized as being opposed to reductionism and entranced by systems; unfortunately, it isn't clear that he understands what reductionism means, but whatever it means, he's agin it. Unfortunately, also, his understanding of systems is naïve and wrongheaded.

Reduction, or *reductionism*, has been used in several senses in science. For instance, Schaffner (1977) distinguished between ontological and methodological reduction. *Ontological reduction* in biology would mean that every biological entity is "nothing but" a chemical, physical entity, so a gene is ontologically nothing but a particular part of a nucleic acid molecule. Unless we are to admit magical, insubstantial substances into science, this must certainly be true. Organisms are chemical entities. In contrast, *methodological reduction* would mean that the methods of physics and chemistry alone are adequate for a complete investigation of biological structures and phenomena; and this is certainly not true, for while those methods are extremely important in modern biology, other peculiarly biological methods have proven essential in research, especially a general methodology called genetic analysis, which I will explain below.

Another classical species of reduction is *theoretical reduction*, which would mean that the entire theoretical structure of some science could be reduced to a more basic science by systematically replacing all the terms and concepts of one with terms and concepts of the other. If theoretical reduction were generally possible, it might mean that a complete physics could encompass and thoroughly explain all of chemistry and all of biology and perhaps even go beyond biology. The only successful reduction of this kind I am aware of is the reduction of thermodynamics to statistical mechanics; all the basic concepts of thermodynamics apparently can be derived by an appropriate statistical analysis of the behavior of molecules. But there has been no comparable wholesale reduction of another science, such as chemistry, to physics. And certainly, biology entails complex concepts that are not reducible to chemistry, let alone physics. Although a gene—to continue the earlier example—is ontologically a specific sequence of

nucleotides in a nucleic-acid molecule, this is not true conceptually and theoretically, because this chemical description must be supplemented by concepts of information content and how the information stored in the sequence is utilized, of structures with special regulatory functions, and the interaction of the nucleic acid with specific proteins.

Capra's view of reduction is actually more simple-minded and muddled. While good analytic philosophers tease apart the meanings of words, Capra likes to mush together words and ideas that seem to him to be related, sometimes using them as if they were synonymous without realizing what violence he is doing to the complicated ideas behind each word. Thus, for him, an emphasis on the individual parts of the system is *reductionistic* or *mechanistic*, even though these words have quite different meanings; in contrast, an emphasis on the structure of the whole system is "holistic, organismic, systemic, or ecological." (Naturally, the former is bad, the latter, good.) He likes to contrast two ways of thinking about complex issues by listing contrasting qualities and ideas, such as this list of yin and yang qualities from *The Turning Point*:

Yin	**Yang**
Feminine	Masculine
Contractive	Expansive
Conservative	Demanding
Responsive	Aggressive
Cooperative	Competitive
Intuitive	Rational
Synthesizing	Analytic

Similarly, in *The Web of Life*, he compares the "self-assertive" and the "integrative":

Self-assertive	**Integrative**
Rational	Intuitive
Analysis	Synthesis
Reductionistic	Holistic
Linear	Non-linear

In this great *bouillabaisse* of ideas, any rational analysis of the various senses of *reduction* would be completely lost. The whole idea of rational thinking is obviously foreign here. We are on a crusade, after all, a crusade for Right Thinking in science and society. The crusade will obviously elevate the yin over the yang, the integrative over the self-assertive. This simplistic way of contrasting complicated ideas against one another allows Capra to set up straw men to be knocked down, and it contributes generally to an overall naïveté that characterizes all of his writing, for each of these words cries out for unpacking and examination.

But it is a very seductive method. It easily draws in the sincere reader who lacks the necessary understanding of both science and philosophy, particularly because Capra cloaks his naïveté in complicated theories and models developed by serious scientists. This creates much of the "Gee Whiz" atmosphere. In *The Web of Life*, for instance, Capra devotes considerable space to the thermodynamic theorizing of Ilya Prigogine, to Manfred Eigen's theory of hypercycles as organizing principles in early evolution, and to other models related to the development of complex structures. This creates a façade of serious science over Capra's writing. The lay reader may not really understand all this, but he may easily come away convinced that the book is a weighty exposition of science to be taken seriously, because Capra cites a lot of apparently unrelated ideas that have a rough similarity to one another. And it is rather sad that Capra has to support his ideas with such complicated, even arcane, science, because he fails to grasp the simple explanation that organisms function as they do because of their intrinsic genetic nature (Guttman 1999).

I was fortunate to have learned basic philosophy of science from Herbert Feigl, one of the younger members of the Vienna Circle, the logical positivists or logical empiricists who formulated modern philosophy of science early in the twentieth century. Feigl often repeated his maxim that what we require is not a philosophy of the "Something More" nor of the "Nothing But," but one that simply asks, "What's what?" One of Capra's main problems is his conviction that a description and analysis of the parts and interactions of complex systems can never be adequate and that we must always be looking for "something more," a nebulous "something more" that will somehow explain it as a "whole system." Capra is eloquent in his praise of some scientists and philosophers who have developed "systems" viewpoints, and he tries to convince his readers that such viewpoints fairly extend from quantum mechanics to Gestalt psychology to ecology, and so on.

He begins his excursion into biology by telling his readers an absolute lie (Capra 1996, 29): "The great shock of twentieth-century science has been that systems cannot be understood by analysis. The properties of the parts are not intrinsic properties but can be understood only within the context of the larger whole." This is such a shameful distortion of the truth—certainly with regard to biology—that I will have to explain carefully why I am so outraged by it.

The outrage begins with Capra extolling two philosophies that died—or should have died—long ago: vitalism and organicism. He writes, "Vitalism and organicism are both opposed to the reduction of biology to physics and chemistry. Both schools maintain that although the laws of physics and chemistry are applicable to organisms, they are insufficient to fully understand the phenomenon of life. The behavior of a living organism as an integrated whole cannot be understood from the study of its parts alone. As the systems theorists would put it several decades later, the whole is more than the sum of its parts" (Capra 1996, 25). Now I am sick to death of the repeated admonition that "the whole is more than the sum of its parts," as if this were some deep philosophical insight. *Of course* the whole of a complicated structure is more than the mere sum of its parts, but the "more" is simply a detailed description of the *interactions* among the parts. These interactions are what make it a system. The engine and drivetrain of my car make up a system too, whose many parts interact in such complex ways that I have to consult experts like NPR's Car Guys to fully fathom its mysteries. But imagine the absurdity of taking your car to a mechanic and hearing him say,

"The operation of your engine is so exceedingly complex that it is fundamentally mysterious. If it isn't operating well, there must be something basically wrong with the engine as a system, so I can't diagnose it by examining its individual parts and figure out what to fix."

Capra, however, persists in making a mystery out of "systems" by imagining that they have some kind of magically distinct properties that cannot be discovered and understood by even a close examination of the parts and their interactions. By doing so, he can claim superiority—indeed, *moral* superiority—for "systems theory" and "systems thinking." As support for this idea, he drags in historical figures who have shown a similar entrancement with systems, such as Ludwig von Bertalanffy, a charlatan of an earlier age, who charmed many with his "general systems theory." Part of Capra's problem is that he knows a little history of philosophy and his thinking about biology is tied to the thoughts of eighteenth-century philosophers such as Kant. Capra roots much of his thinking about biological systems in Kant and praises him for discerning the difference between an organism and a machine and for first using the term "self-organization." With such adulation of thinking that is now 200 years out of date, it is no wonder that Capra finds it difficult to comprehend what has actually been happening in biology in our time.

It is disturbing—indeed, frightening—to find someone at the end of the twentieth century praising the philosophies of vitalism and organicism, particularly vitalism. Capra doesn't seem to understand that vitalism is inherently a rejection of science, a statement that the properties of organisms can be explained only by magical qualities that science cannot discover. (And he tries to support his sympathies with vitalism by citing the vague and highly questionable ideas of Peter Sheldrake—another instance of citing any ideas that seem to support his own, no matter how useless they might be.) Organicism, on the other hand, was a kind of vague protest that "mechanistic" biology could not fulfill its promise, so "something more" was needed. This viewpoint was most fashionable during the mid-twentieth century, up to about the 1950s, before modern molecular, cellular, and genetic biology had shown how the promise was to be fulfilled. In 1940, the zoologist Libbie Hyman expressed organicist dismay by writing, "The conception of the organism as a physicochemical machine encounters the insuperable difficulties of explaining a machine which runs itself, repairs itself, alters itself to meet the exigencies of surrounding conditions, and reproduces itself; and what is still worse, attains its final form by developing from a simple beginning through an orderly sequence of forms and evolves through time into a succession of machines of ever increasing complexity of construction."

Yet the nature of the organicist protest was never clear. Beckner (1968) wrote that "The characteristic doctrines of organismic biology involve methodological proposals for investigating the behavior of systems whose structural complexity precludes, at least at the present time, explanation in physicochemical terms." Yet just what those methodological proposals might entail was never clear, and Beckner went on to say, "Organismic biologists tend to be vaguest at just those points which are most crucial for an understanding of their point of view." Similarly, Ernst Nagel (1961) wrote, "Although organismic biologists deny the suitability if not always the possibility of 'mechanistic theories' for vital processes, it is frequently not clear what it is they are protesting against."

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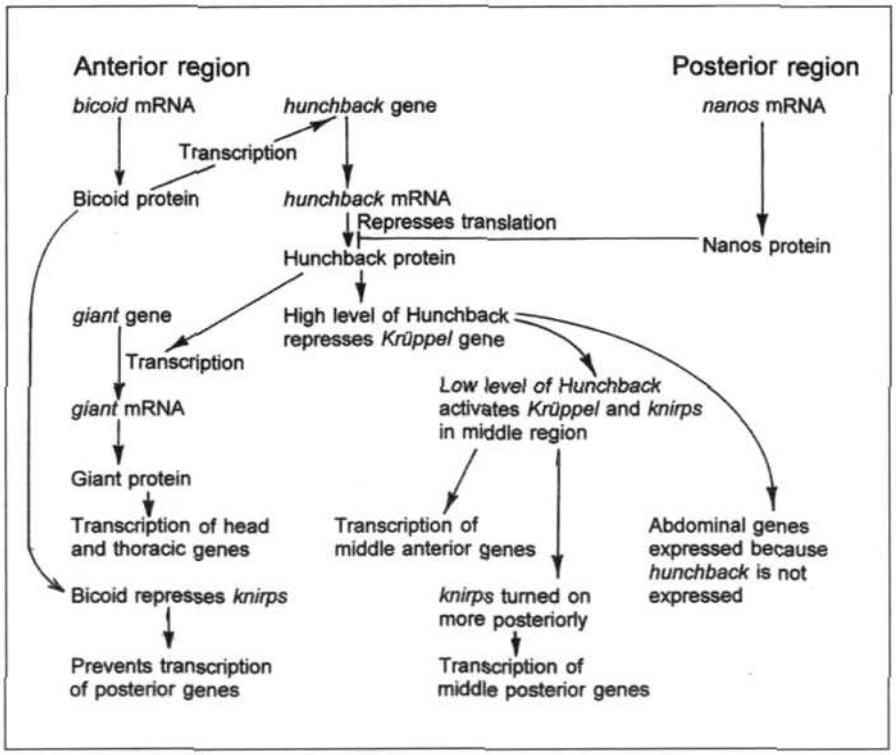
Organicists protested that physical and chemical research methods are inadequate for the study of living systems, because they require the dissection of organisms into their parts and—Capra's repeated theme—this destroys the essential wholeness of the living system. They looked forward to the discovery of some intrinsically biological methods for investigating organisms as wholes; thus they enthusiastically embraced ethology, the study of animal behavior. It happens that such a methodology did develop later, after the most ardent organicists were all dead; the method, genetic analysis, arose quietly through the work of pioneering molecular biologists using microbiological systems, primarily bacteria and the bacteriophages (bacterial viruses or simply *phages*) that grow on them. Without going into excessive detail, the method depends on finding mutants—individuals carrying mutations in their genomes that give them interesting new properties, often specific malfunctions. These mutants can then be used in several ways. Through specifically genetic methods, the mutations can be used to locate and define the genes in which they occur; a gene is initially defined operationally as the locus of mutations that affect the same function. Each gene encodes a distinctive protein, and the mutants can be used to identify these proteins. Furthermore, by means of various clever experiments, the mutants can then be used to explore the function of those proteins and their interactions in the complex systems that carry out each process.

The great bugaboo of biology for organicists was embryological development. Even by 1940 or so, successful "mechanistic" explanations were emerging in physiology, such as the fact that as the pumping of the heart muscles pushes the blood onward, hormones traverse the bloodstream to carry their messages. But embryological development seemed beyond the pale. In the early twentieth century, embryologists might struggle valiantly with limited knowledge and limited tools, discern some features of the complicated process of development, and then reach the ends of their careers seeing that most of the process was still hidden in fog. Many of them then seem to have said to themselves, "If I, working hard on this problem for an entire lifetime, have not been able to penetrate its mysteries, then embryological development must entail unsolvable mysteries, and organisms must intrinsically be systems that ordinary scientific methodology cannot explain." Capra picks up this theme and writes (Capra 1996, 25) that identical genetic information resides in all cells in a developing embryo, so there is mystery in the fact that many distinct types of cells then develop. "This basic problem of development, which appears in many variations throughout biology, clearly flies in the face of the mechanistic view of life."

That sentence could only have been written in 1996 by a biological ignoramus. The simple fact is that many developmental biologists have been determining exactly how sequences of different genes are turned on and off in different parts of an embryo to finally produce that extraordinary array of distinct types of cells. No one has any business writing a book about the failure of "reductionistic" or "mechanistic" biology if he has not tried to understand how a fruit-fly embryo's anterior-posterior axis is determined by gradients of Bicoid and Nanos proteins, which translate into a cascade of activating specific gap and pair-rule genes, how Hedgehog and Decapentaplegic proteins interact to stimulate the differentiation of photoreceptor cells in the fruit fly's eye, or how Hox genes determine the placement and character of specific organs throughout much of the animal kingdom. The reader who hasn't studied developmental genetics isn't expected to understand that sentence, but Capra should. I'm sure, however, that he has no idea what I'm talking about, and no interest in learning. (The funny names of those proteins derive from the names initially given to the funny-looking mutants that were used to identify them.)

Obviously, studying the isolated parts of any system provides only limited understanding of the whole; the key to understanding an organism in "mechanistic" terms is understanding how the parts interact with one another. Because organisms are chemical structures, these parts engage in chemical interactions. Much of the story of biology entails one molecule binding to another, pushing on it subtly, changing its shape, and thus changing its operation. Because Capra is ignorant of the details of real biological systems, he doesn't realize how well descriptions of such interactions truly explain "what's what." He writes (Capra 1982, 114), "Obviously the study of the cooperation and integrative activity of genes is of first importance, but here too the Cartesian framework has made it difficult to deal with these questions. When scientists reduce an integral whole to fundamental building blocks—whether they are cells, genes, or elementary particles—and try to explain all phenomena in terms of these elements, they lose the ability to understand the coordinating activities of the whole system." But this is just more nonsense. Comprehensive volumes such as Alberts et al. (1994) or Watson et al. (1987) contain hundreds of perfectly satisfactory explanations of how complicated biological systems work through the interactions among specific elements. Since biology is still an active science, many of these stories are incomplete. But research programs that elucidate the structures and interactions of parts consistently elucidate the operation of the whole, and investigators are never inclined to scratch their heads and admit



In spite of Capra's claim that biological systems can only be understood holistically, i.e., as whole systems, modern biologists actually understand them in large part as operating through interactions among many distinct elements. This schematic depicts a few interactions among genes responsible for the early embryonic development of a fruit fly, *Drosophila*. The genes have unusual names—such as *nanos, bicoid,* and *knirps*—because of the appearance of the mutants used to identify them. Gene names are italicized. Transcription is the process of producing specific messenger RNA molecules (mRNA) that carry copies of each gene to the factories that synthesize the corresponding proteins. (From *Genetics: A Beginner's Guide*, B. Guttman et al. Guttman, Griffiths, Suzuki, and Cullis, ©2002. Reproduced by permission of Oneworld Publications.)

defeat by announcing, "We have examined every facet of the system with the tools and concepts available to us, and a complete and satisfying explanation still eludes us; there must be some indescribable factors regarding the system as a whole that will explain how it works."

The irony of Capra's books is that while he persistently claims to represent the cutting edge of science, his major problem is being *archaic*. Bernstein explained in 1978 that the physical theories Capra is most enthusiastic about, "S-matrix theory" and "bootstrap," had a certain vogue a decade earlier. Yet in 1996, Capra is still extolling the virtues of these ideas. And so in biology: he continues to extol the archaic ideas of organicism and even of vitalism.

The ultimate point of all this stuff is supposed to be to change the thinking of humanity about ecology and persuade us all to live in ecologically sound ways. Capra praises the "deep ecology" of Arne Naess, contrasting it with old-fashioned "shallow ecology," which he says is anthropocentric, or human centered. (And meanwhile, he wanders through such highly suspect notions as the Gaia hypothesis, which would have us believe that the entire planet is a living organism, whatever that means.) I wonder if Capra has ever really read a serious book about ecology, because all the fat, detailed ecology books on my shelf describe and analyze research projects that say nothing about humans. They are careful, analytical studies of a host of plants, animals, and microbes, revealing how they live, how their populations change, what they eat or what eats them, how they interact chemically, and how they live together in communities and ecosystems. All this work forms the basis for a serious conservation biology, and when combined with detailed studies of pollution and changes being wrought across the planet because of human actions, it forms the basis for sound arguments that if humanity continues to treat the world as we have been treating it, we are in for various kinds of disaster. And all this emerges without once having to immerse ourselves in some kind of mysterious thinking about "systems."

I return to my original question: What does one do about someone like Fritjof Capra? To give him his due, he is on the side of the angels with his message that humanity must change its ways of living and adopt ecologically sound ones to avoid destroying the biosphere. It is a good message, one that many writers are trying to pound into the thick skulls of complacent citizens and timorous politicians. Capra seems to be a kind of hero to many who have already gotten this message and are looking for alternative lifestyles for themselves and for our society; he appears to be a scientist saying all the right things about ecology from a scientifically sound basis—and not only ecology, but psychology and sociology and all the rest. He is seductive in seeming to provide scientific grounds for all that environmental and human-rights activists hope to achieve.

So I might even refrain from all my criticism of Capra's ways and cheer him on. We need a transformation in society, to avoid the overpopulation and ecological crises we are creating. "Go, Fritjof, go," I might cheer. But at what cost? What shall it profit a man if he shall save the whole world in one respect but lead it into a chaos of muddled thinking? Is it worth it, to humanity as a whole, for someone like Capra to convince people to live in ecologically sound ways by promoting scientific nonsense? Let me try one answer to that question by asking what societal forces are resisting the needed transformation in human ecology. Those forces clearly are economic. Our society depends upon a flow of resources into manufactured goods, which are purchased and consumed, and this system is maintained by enormous conservative economic forces. Any attempt to alter that economy precipitately could bring the whole structure down upon our heads disastrously, though writers such as Paul Hawken (1993a) and David Roodman (1998) have explained how free-market methods can be used to create an ecologically sound economy.

Now, are these conservative forces likely to be influenced by the writings of a Fritjof Capra? Not bloody likely! I think it will be clear to "tough-minded" international businessmen that Capra's writings are just so much fluff and nonsense. Then, what might make them change their minds about their policies and actions? My suggestion: serious, hardheaded, well-done science. To take just one example, even though our current government denigrates "theories" such as that of global warming, some large corporations are taking notice and are starting to see that it is in their economic interest to take science seriously and get on the bandwagon of reducing the production of greenhouse gases. They have been convinced by carefully performed research and by the critical collection of data by equally tough-minded research scientists.

We may not win the battle for the conservation of the earth's environment for a long time, perhaps not until the human population has risen so high that the predictable disasters start to occur—mass starvation, water depletion and wars over water rights, or unbearable pollution of the air and water. But we will not win the battle any more easily through the efforts, no matter how sincere and well-intentioned, of another pseudoscientist.

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Fakers and Innocents
The One Million Dollar Challenge and Those Who Try for It

James Randi describes some of the difficult, innocent, and impossible people who apply to be tested for his foundation's $1 million challenge for evidence of paranormal powers.

JAMES RANDI

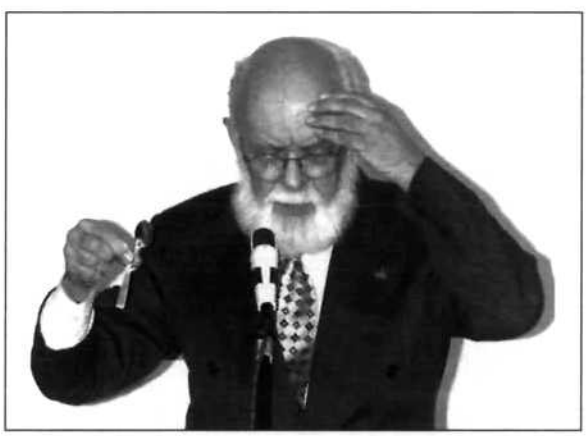
I am going to describe difficult, impossible, and unknowing contestants who've applied for the James Randi Educational Foundation's million-dollar prize. I can say this from the very beginning: give me a faker, give me someone who appears before me and is lying, who is attempting to fool me, to deceive me, or to deceive anyone else, the media, or other scientists. Please don't give me the innocent who really believe they have the powers. They're the difficult ones to handle; a true believer is a terrible enemy, but the fakers I can handle. Those people I can come out against, I can confront them, I can show what they are doing, and get rid of 'em.

Now, of the people who apply for the million-dollar

challenge of the James Randi Educational Foundation—and I'm sure you all go to my Web site regularly, right? It's www.randi.org. All right. You will find, reading over the archives on that Web site, that about 80 percent or more of the people who apply are dowsers, or diviners. That is, people who, with a forked stick or with a pendulum or with some sort of wire stretched out in front of them, believe that they can find water, gold, oil, lost jewelry, children, anything.

One man even told us that he had a particular, specific ability. This dowser lived in Kentucky, and said that he had the ability to find lost hunting dogs; that was the only thing he could find. He was very sensitive to that, and if you were able to give him a little hair from the hunting dog, he would put it on the end of his dowsing stick and it would lead him directly to the dog.

Sometimes there was an error. Sometimes it would lead him to another hunting dog, which was very similar because the DNA would be very similar, you see? He actually told me that he was tuning in on the DNA, and then he said, "Oh, there's one other thing that I can find, too." We said, "What is that?" He said, "I can find bullets, because I tune in on the DNA of bullets."



James Randi

Now, I didn't know that bullets reproduce that way. Perhaps you take two .38-caliber bullets, leave them alone for a while, and they produce .22-caliber bullets? I don't know. These people are so exceedingly naïve. These are the hard people to handle. Someone who has a trick, I can get 'em right away.

Now, handling the subject of difficult cases that we have to investigate, I hate to tell you this, but the application form for the James Randi Educational Foundation prize has twelve, I think now thirteen, rules. Very simple. They're not difficult to understand. The most important one of the rules is that you have to say what you can do, under what circumstances, with what accuracy. How could anything be simpler?

Well, a good 80 percent of the people who apply can't make that statement. Not only that, they're told on the application form that they must write two paragraphs—no more—describing what their ability is.

People can write very long paragraphs. Some of those paragraphs run three pages. We had one just recently from a gentleman who had some strange claim—I don't remember—he did 18 pages, filled on both sides, in handwriting. I think his ancestry must have been Turkish or something, he was still using, I think, the Turkish alphabet. It was almost impossible to understand what he was writing about. We had to get him down to two paragraphs, and that's not easy.

Completing the form is the most difficult thing that these people have to do. After that, it's pretty easy. That doesn't seem logical. You would think at this very moment there should be people knocking on the door trying to get my attention so they could try for the million-dollar prize. I don't hear anybody knocking, do you? No.

Now, another thing that is very, very difficult to investigate is medical claims. Our colleagues in India, through B. Premanand there, a most estimable gentleman, good friend of mine, the people in India have a little more freedom to investigate these things. There is a wonderful documentary made by the BBC some years ago in which they followed Mr. Premanand around and they had to demonstrate that the so-called "god men" of India could not heal as they claimed they could heal. They actually had a snake bite a dog. Now, that's not acceptable in our society, particularly not in England, where animals are more important than human beings, believe me. They had the snake bite the dog, and then the guru, the "god man," tried to save the dog. Not to your great surprise, I will tell you that the dog died.

Now, the guru, the "god man," was most amazed at this. "Oh, it always worked before," he said. Well, we offered to do another test with him. He didn't want to do that, and we haven't seen him since. See, you can get away with that sort of thing in some countries, but certainly not in England, not in the United States, and—I suspect—certainly not in Italy.

Now, every now and then the difficult cases are ridden, like a horse, by some scientist, some academic who has adopted this as his *cause célèbre*, something that he's going to promote, he just *knows* the claim must be true.

Just recently I was in Würzburg, in Germany, where we ran some tests of people who were applying for the prize. Again, so that the tension won't be too much for you, they all failed and the million dollars is still quite safe. There was a gentleman there who I won't name so that he won't be embarrassed. This is a scientist with a German university, retired, who said I cheat all the time, otherwise there would have been a winner a long time ago. And, he said, in some cases, people have already won the prize but I won't pay them. He also said that I'm too aggressive and rude.

Now, I can be aggressive, that's quite true. Yes, just try me and you'll see. But with these innocent people who are self-deceived, certainly I am not aggressive.

Well, this professor, he showed up in Würzburg and at first he was very angry about everything, and he looked at me with

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this awful expression on his face. After half an hour he was lightening up a little bit because he found that I was not the very bad person that he'd believed I was.

But then—it's hard to tell you this, really—he was doing tests that he wanted the million dollars for, but he wanted to see how I did the tests first, that's why he was in Würzburg. This man had said that he didn't like my attitude—all of those things. He showed up, he watched me do some of the tests, and he lightened up considerably, but then he showed his weakness. Now, this is an academic, a man with a university degree. I don't have a university degree. I'm merely someone who observes and uses common sense. You don't get a university degree for common sense, apparently.

This gentleman was doing tests with children in which he had a large bag, and inside were ping-pong balls numbered 1, 2, 3, 4, 5, etc., all the way up to 25, and the children were supposed to reach in and select any given number—ah-ha! There it is! I win!

Well, I wondered about that. What was his expertise in ping-pong balls? He showed me the bag. He laid it on the table, and Martin Mahner and I, who were there watching the tests, looked at one another in astonishment. The bag was made out of a netlike plastic material. You could read the numbers of the balls from outside the bag! You could see it very plainly, and on my Web site I have—I will have shortly—some photographs that I took with my digital camera where you can see the numbers through the bag.

Well, then I decided to test the man to see what his observing powers were, so I said, "Let me demonstrate." I reached into the bag and I took out a ball with number 3 on it, and I said, "That would be ball number 3." He said, "Yes." I put it aside and said, "Now I will choose ball number 5." Ball number 5!

He was astonished. Of course, now he assumed that I had psychic powers, too, you see? Well, I'll tell you the secret, it's very simple: when I reached in, I took two balls. One here, and one down here [shows hand] and I looked at both number 3 and number 5, and I said, "Number 3"—having the number 5 ball still in my hand—then I reached into the bag and came out with number 5. That's what had astonished him.

Now, that's two things in which he demonstrated his ignorance of scientific procedure. But then it really got to me. We had two thermometers laid there that were measuring the air temperature. He wanted to photograph them with his digital camera to make sure the two of them were reading exactly the same temperature. He reached down and took one of the thermometers and he turned it around so the numbers were facing his camera. He took the photograph, then he looked at the thermometers. He said, "Oh, this thermometer is reading about one-third of one degree Celsius higher." That was because he had picked it up by the bulb end so it was measuring his body temperature! *This is a scientist!* I am not a scientist, but I have common sense.

Now, we get claims all the time—as far as difficult claims go—from people asking, can we prove that God doesn't exist? Ah, but they have the wrong picture, you see? I don't say that any of these powers, including God, doesn't exist; I make no claim. I ask *them* to make the claim, and *they* have to prove that *they're* right. So they say, okay, "God exists." I say, "Prove it." "Ah, um, I'll call you back." "Hello?" and we never hear from them again.

Now, the other people who are difficult to test are those with very strong emotional investment in the tests. I'm a sympathetic man, I really am, I'm considerate of these people. They come to me and they want to be tested, but I know that when they fail the test, theoretically they should be very depressed, they should feel very sorry: "Oh, something's awfully wrong here." It will destroy their emotional stability. I don't want to do that, but in some cases it's not possible to avoid it.

For example: Linda, my administrative director, came to me recently and she said, "There're some people at the front door from Lithuania." Now, I'm in Florida. They came all the way from Lithuania because they were sure they could win the million-dollar prize. They said they could do psychic diagnosis of the human body, and I said, "Well, we're not ready for you. If you want to give a quick try, you can do that, sure. Ah, try me."

Now, that was unwise of me because many details about me are on the Web and can be found with the search engine Google. Google knows everything, you know that, yes? Google knows all facts. And I thought maybe they would look me up in Google. No, they weren't that smart.

The two women who came in did a complete analysis of my body, and they decided that I had every disease that a 74-year-old man *should* have. I don't have any of those. I have others, and they didn't spot any of the other ones, and I won't tell you what they are.

But it was so typical. They know that I should have prostate problems. I should have this. I should have other problems. But I didn't have any of those, and I said, "Now, you told me that you would be one-hundred percent correct." "Yes, yes,

yes." And I said, "Well, here's a medical examination from two months ago, there's all the details there." They just pushed it aside. I said, "But you aren't a hundred percent correct." "Oh, yes, yes! But we know things that the doctors don't know."

Okay . . . . But, you see, that's a very difficult thing to handle. How do you answer something like that? Of course, the point is they had not made out the application form, filled out the required documentation in advance, so the tests were not valid. However, the sad part of this is that the new president of Lithuania has now employed one of these woman as his official psychic! That's a little worrisome. I wouldn't go to Lithuania. Not now.

I don't want to hear stories about what happened in the past, and the rules specifically say it must be here and now, with an experiment that we agree on and design together.

We had other sad cases, difficult situations. One Mexican man showed up at our door with an empty suitcase in his hand—to hold the million dollars. We asked him, through our interpreter, why he had come. He was a very poor man, and he'd come from Mexico, somehow, with this empty suitcase, and he said, "I can win the million dollars because I met a UFO out in the desert." "Yes. . . ?" "And they spoke to me." "Yes. . . ?" "And now I glow in the dark. You can see me in the dark." "Okay, we can test that right now."

So we took him into our library, which has no windows, it's all dark inside, and I went and got two people off the street. I said, "Would you volunteer to do a scientific experiment?" "Oh, yes, of course." So they came in, I put them in the room, put the man in the room, turned out the lights. I said, "Can you see this man?" They said, "What man?" I said, "The Mexican gentleman here says he glows in the dark." "No, no." "You can't see him?" "No."

We turned on the light again. I said, "They can't see you," and he replied, "Oh, I'm not feeling strong, I haven't had breakfast yet." I said, "Well, go and have breakfast, if you want, and come back." "Oh, I will, I will." He took his suitcase and he left. I didn't see him again. He didn't come back. But you have to feel sorry for people like this.

I also tested a group of children from an organization called *Instituto Más Vida*—the Institute for More Life. This is a group in Mexico that teaches children to see while blindfolded. Well, actually they don't teach them to see while blindfolded, they teach them to *cheat* while blindfolded. When you give the children something written and they're wearing a blindfold—you see them peeking . . . ah, yes, then they can read it, you see? Or if you hold it up here, they say, "What paper? Where? Where?" You hold it down here, way down here, they can see it, and they like to put it on their laps while they're sitting in the chair, and then they read it like this, with their head tilted up.

So I simply take a little bit of tape and put it into their eye orbits over their eyelids so they cannot open their eyes, and they lose their psychic powers immediately. I tested them live on Japanese television, and another group like that in Korea. These are some of the difficult ones to handle because these are children, and you don't want to be cruel to children. They're doing a little joke. They don't think it's serious, but of course it can be very serious.

You must know that most of the people, the vast majority of people who come to be tested for the million-dollar prize, are innocent. They're self-deluded. They're not the fakers. Oh, I've had a few of those, but I get rid of them. I point where the trick is, good-bye, and they're gone. But very few. Most of them are very innocent, so innocent that when you ask them, "How successful will this test be?" They always say, "One-hundred percent. I never miss." That's an easy test to do. As soon as they miss one . . . *arrivederci.* Goodbye. Out of here.

I have tested many people who said one-hundred percent, and I must tell you this to show you the poor understanding that some people have of statistics. On a program that we did for Lexington Broadcasting Corporation, before the million-dollar prize—for one hundred thousand dollars—I spoke with the producers and they said, "Now, we've got to be careful that we don't lose our hundred thousand dollars." I said, "Oh, yes, of course." An astrologer applied, and he said, "If you give me twelve people from the audience who have their drivers licenses to prove what month and date they were born. . . ." "Yes. . . ?" "Make sure they're twelve different signs of the Zodiac. . . ." "Yes. . . ?" "And I will ask them simple questions and I'll be able to tell what their sign is." "Okay."

So we got twelve people and he asked them questions. He said things like, "When you see a motion picture in the theatre, do you like a comedy better than a drama? Ah, I see, that's significant. Do you like red and orange better than you like blue and green? Ah, really?" And then at the end he gave them a piece of paper, sealed in an envelope, which had their sign, what he thought their Zodiacal sign was. There were twelve of them.

Now, I said to the producers, "This man says that he can get eleven out of twelve right. Think about that." And they said, "No, it should be twelve." I said, "No, I'd like to make it ten." And they said, "Oh, no, that's too easy, no, it's too easy." They didn't understand that getting eleven out of twelve is *also* twelve out of twelve, and I tried to show them on paper, and they were saying, "No, no. We want twelve out of twelve." "Okay." This was the producer of the program and all of his staff. Strange, but nonetheless true.

Now, as I said, the major proportion of our claimants are dowsers, and they're almost always innocent, except in two cases that happened—both in Australia. In one case we found the dowser asking the superintendent of a building where the pipes were under the ground before we got there. That's not allowed, no. In the other case, a man had developed an elec-

tronic method of telling something about a machine. I won't get into all the details on that one, but only twice have dowsers ever actually tried to cheat to win the million dollars.

We just did tests, as I said, in Würzburg. Well, I'm always ready for a surprise. Würzburg wasn't very much of a surprise because the tests were more or less what I expected. One of them will really interest you. A man who said that if he took a bottle of water right from the store and passed his hand around it, it would taste better than the other bottle which he didn't affect.

Well, we tested that, and it was very easy to do. We gave him fifty trials, where after he left the room, the randomizing team would take samples from the treated bottle and put them into certain wine glasses and from the untreated bottle into other wine glasses. His chance was 50 percent—one in two—of being successful.

He was very pompous. "Oh, yes, I'm gonna win this prize, heh, heh, heh, I'm very successful at this." Well, at the end of the test, we showed him that he had gotten twenty-two correct out of fifty, when twenty-five would be expected by chance. Well, he has now called the GWUP [German skeptics group] and offered all kinds of excuses. One of the excuses was when he was [makes hand gestures] doing this, the other bottle was too close, because these powerful vibrations, you see, go out to the other bottle, too. Okay, well, we'll do it next time with them five meters apart, and then twenty meters apart, but I think he won't be back. They very seldom return to be tested again.

They get stranger and stranger. One man said that he had an object with him that he could dowse or divine with his pendulum. He had a piece of wire that he wiggled around, and he was very sensitive to this object. I said, "Use whatever object you want." Now, I thought it might be a piece of gold, or something like that. No, it was a little heart-shaped piece of soap. You don't ask questions of these people, you just say, "Okay, if that's what you say, we'll do it." So we did some "open" trials where he knew where the soap was in one of ten boxes, and he was successful every time because he knew, you see? But the pendulum went like mad! Over this box, nothing; this box, nothing; this box, nothing. Oh, there it goes! When he knew.

Well, then we had him do thirteen tests for another statistical reason. At the end of it he had gotten one correct out of the thirteen which is in good agreement with the one out of ten the chances were that he would have.

He said that he was very sensitive to this piece of mineral. I said, "If I conceal it in my hand, can you still detect it?"

He said, "Oh, yes!"

So I concealed it in my hand and the wire went like crazy. "Oh, but look," I said, showing that hand to be empty.

And, without pause, he said, "Oh, yes, I was detecting it from your other hand."

Now, that's what they do. To him, he had not lost the contest at all, he simply was detecting it in the other hand because his powers were so great.

Well, the "soap dowser," ah, failed. Goodbye. But then we had a man who could make a mask move. He took aluminum foil and pressed it onto his face, and took it off. That gave him a "mask." He suspended it on a fine hair, a human hair—not from me, obviously!—inside a sealed container, and naturally it sat there and very slowly turned, then it very slowly turned back, very, very slowly. We said, "Okay, we'll give you the instruction when it will turn and when it will *not* turn." But it never stopped turning. Back and forth, all the time, going, going, going, and he couldn't understand that, either.

This is the kind of people who are innocent; they really believe they have the powers. This "mask" man has since come up with excuses as to why he failed. But there are some cases that are impossible, absolutely impossible, and most of those cases are created by the claimant's lawyers. Remember lawyers? You've seen them, yes, I'm sure you have them in Italy, too. The lawyers often make it impossible, because for months and months they exchange letters. We want to change this rule, we want to change that rule, we want to take this adjective out, we want to change this number and, okay. . . . Yawn. And we go on and on and on with the lawyers. So most of the cases that it's impossible to test, it's because of the lawyers.

But there are others, too. . . . You may think that I'm making these up. I don't have to invent these things. In fact, I

The One Million Dollar Paranormal Challenge

At JREF [James Randi Educational Foundation], we offer a one-million-dollar prize to anyone who can show, under proper observing conditions, evidence of any paranormal, supernatural, or occult power or event. The JREF does not involve itself in the testing procedure, *other than helping to design the protocol and approving* the conditions under which a test will take place. All tests are designed with the participation and approval of the applicant. In most cases, the applicant will be asked to perform a relatively simple preliminary test of the claim, which if successful, will be followed by the formal test. Preliminary tests are usually conducted by associates of the JREF at the site where the applicant lives. Upon success in the preliminary testing process, the *"applicant" becomes a "claimant."*

To date, no one has ever passed the preliminary tests.

Your claim casts you in the role of the defendant, and the only thing the JREF asks of you in defending your claim, is to *demonstrate* it. No theories, no stories, no anecdotal evidence, no photographs, no tape recordings; just a simple demonstration. Nothing more is required. The Challenge rules may seem complicated upon first glance, but they are not. You have a paranormal claim? Great! Demonstrate it successfully, and the Million Dollar Prize is yours. It's really that simple.

—From the James Randi Educational Foundation Web site (www.randi.org)

could not invent these crazy claims like the heart-shaped piece of soap. That would take Victor Hugo or some other great fiction artist to create. I couldn't create them.

There are two brothers in Dubai, Arab Emirate. They sent an e-mail saying, "We want the million dollars." I said, "Okay, why?" "Well, because the two of us make the sun rise every morning."

Well, I thought about that. I wonder how we could design a test? So I said, wait, wait, this may be just a joke. Well, whether it is or not, I'll treat it as if it's serious. So I wrote back to them and I said, "Which one of you makes it rise?" "Um, we don't know. We both work on it and the sun rises every morning, you can see that." I said, "Yes, the evidence is 100 percent in your favor." Then I said, "I have an experiment. One of you shoot the other one. Then if the sun rises the next morning, it wasn't him. Must be you. Well, then, what you do is you shoot yourself, and if the sun rises the next morning, you lose. But if the sun doesn't rise the next morning, I'll pay you." I don't think we've heard back from them.

The worst things that are impossible to test are the anecdotal stories. Anecdotal stories like "Oh, my grandmother did this, she did that." I wasn't there, I don't know your grandmother, I don't want to hear stories about what happened in the past, and the rules specifically say it must be here and now, with an experiment that we agree on and design together. But anecdotal stories are by far the greatest part of it.

Now, another test in Würzburg. A lady showed up with her husband, and she said if we provided her pictures of people, she would be able to tell if these people had heart conditions. Okay, that's a good test. So we got her thirty-eight photographs of people of all ages and different genders and a great variety of people, and we knew from medical examinations and from medical records that some of these people—approximately half of them—had very obvious heart conditions for which they were being treated. For the others, EKGs checked them out perfectly. No problems with their hearts.

Well, she also said that she would be one hundred percent correct. By chance, she should have identified nineteen out of the thirty-eight samples that she had. She was using the strangest method I ever saw in my life. It was a combination of Therapeutic Touch, Chinese pulse reading, and applied kinesiology—forcing the arm up and down—all *done on her husband while he held the photograph!* Don't look at me like that, that's her idea, not mine. Well, she got eighteen correct out of thirty-eight, just less than chance. Well, now, of course, she's also written to GWUP with all kinds of excuses, and now she wants her lawyers to stop me from publishing this information. I have just published that information. Now, go ahead, stop me.

This is difficult in many ways, this whole subject of testing people. It's difficult from a moral point of view. Now, a person like Uri Geller—you remember him? He used to bend spoons. There's an occupation for you! "Mr. Geller, what do you do for a living?" "I bend spoons." "Do you straighten spoons, too?" "No, no, I just bend them. . . ." I ask you: has bending spoons ever moved humanity forward one little bit? No. He's been doing it for thirty years and our history hasn't changed one bit. Hasn't made any difference whatsoever!

People like Geller say they don't want to take the million-dollar prize—well, for many excuses. "There's no million dollars." Well, there is. "And you won't give it to me." I have to, under the law; I don't have any choice. But Geller's reason is very unique. He says, "No, I won't try for the million dollars, because I don't like James Randi."

Wait a minute. If he doesn't like me, why doesn't he take my million dollars? You show me somebody I don't like who wants to give me a million dollars, I'll take it, right away, and be very happy about it.

I'll close with some comments on what should be done when you do these tests. Some people have said, "Oh, with Geller, give him a spoon, an 'industrial-strength' spoon that nobody can bend." No, you have to do it *their* way, under *their* circumstances. You have to give them as much play as you can. The point is not to prevent them from doing it, but to catch them at the trick, if there is a trick. Catch them, because otherwise you have no evidence.

Always get statements in advance. From all of the people who apply, of the about two to three percent who get through the first process just to do the preliminary test, I get statements in advance. I ask them, what are the statistics that you will agree to, and what will happen if you don't succeed? That's the interesting question. I say to them, "If you fail in this test, what will your conclusion be?"

And they say, "Oh, I don't have to answer that because I know I will win."

"Well, wait a minute, just get crazy in your head, just suppose that maybe you won't win the million dollars. What will your conclusion be?"

They say, "Oh, well, then I haven't got the power."

At that point, I give them a sealed envelope and I say, "Open that up after the test." I say, "Now, you won't have any excuses?"

"No, no. No, no. I know I'm going to win, I won't make any excuses."

Okay. They do the test, they fail, and immediately they say, "Oh, well, it was Thursday, that's a bad day for me." Or, "Jupiter was in Sagittarius. That's a very bad combination for me." Or it was too hot or it was too cold, whatever. They always have excuses.

I say, "Open the envelope."

Inside the envelope it says, "Though you agreed not to make any excuses, you have now made the excuses. I have the power of prophesy. I should win the million dollars. In fact, I think I will."

People have asked me a very important question: What would happen if somebody did win the million dollars? Now, I don't think it's likely, I think it's very highly unlikely. But I would gladly pay the million dollars because it would mean that all of us, the whole world, would know a new aspect of science that never existed before. In fact, that discovery would overturn science completely, and scientists don't mind that. They're prepared to be reversed, because that gives them a better knowledge of the universe. So if I have to pay the million dollars, oh, it would hurt, yes, but I would also be very happy. That would be my investment in increasing the knowledge of human beings, and we are all human beings. Let's celebrate that fact. □

What Should We Do with Skepticism?

The word skeptic *has negative connotations: naysayer, refuter, debunker, spoilsport. . . .*
So why do we stubbornly continue to call ourselves skeptics*?*
There are good reasons for avoiding this label.

ALEJANDRO J. BORGO

I want to begin by saying that this article deals with the use of the label *skeptic*, not with the validity or usefulness of skepticism. In fact, we are dealing with skeptics' actions, not with skepticism, though the success of the latter depends very much on the former. The real title of this article is, of course, "What should we do with *skeptics*?" I will refer to the terms *skeptic* and *skepticism* in the context of mass media.

Let's begin with a brief conversation between two skeptics:

Is it useful to call ourselves skeptics?
No.
How can you be so cruel?

We know that we are skeptics, and we show it through our

actions. But it is not always necessary to publicly identify ourselves with that term. It does not have to be our calling card—and there are reasons, and sufficient evidence, to conclude that it might be better if we don't.

When I tell people that I'm going to be attending a World Skeptics Congress, the people I'm speaking with get strange looks on their faces that say: *"And what's that supposed to mean?"*

I explain that it's a convention attended by biologists, philosophers, psychologists, astronomers, and illusionists, for the purpose of discussing fascinating phenomena. I tell them that those fascinating phenomena include magic, psychic powers, flying saucers, reincarnation, alternative medicine, ghosts, etc., the kinds of things that unscrupulous people sometimes take advantage of to make easy money, and which in many cases may actually cause physical harm to others.

I find myself in the same situation when people ask me about *Pensar* magazine. But I try to explain what the magazine is about without relying on the use of terms like *skeptics* or *skepticism*. I make an effort to come up with a more palatable, better thought-out explanation. Even though we can explain for hours on end that being a skeptic does not mean denying *a priori* every phenomenon we encounter, the word still retains its negative connotations. That's obvious whenever we hear: *"Ah! You're a skeptic! You don't believe in anything."*

The attempt to find an alternative term for "atheist" has yet to come to any pleasant conclusion: *bright*, it seems, has wound up being one more failed effort. It is just another label, precisely when we needed to go in the opposite direction. As Chris Mooney (2004) says, having considered Dawkins's and Dennett's proposed nomenclature: "A basic lesson of framing is that you have to avoid promulgating messages that reinforce negative stereotypes, because these stereotypes tend to be too deeply held to defeat head-on."

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Communicating Skepticism

One could say that the term *skeptic* should not be what is important; and there is a lot of truth in that assertion. However, in the world of mass communications, image is everything. As we all know, image is not restricted to outward appearance; it has a lot to do with the thoughts and feelings we are able to create within the minds of those who hear us.

The way we speak, how we argue, which words we use or avoid, what attitude we take; every one of those things either hurts or helps our message. It all comes down to how we use them. Our ability to communicate ideas and feelings is our primary tool, and therein lies the importance of image.

Whenever we address the public, we ought to consider the word *image* as equivalent to *consequences*, the consequences that the image provokes in the reader, the viewer, or the person with whom we speak.

Though we frequently hear and read the expression "skeptic movement," I don't see skepticism as a philosophical movement. Let's consider an important aspect of skepticism. As Paul Kurtz (2004) says, and I strongly agree: "Skepticism is a method of inquiry primarily, not an attitude or posture or philosophical viewpoint that denies entities or phenomena out of hand." Neither is skepticism a profession. No one graduates from school as a skeptic, no one holds a job as a skeptic. So . . . why do we continuously repeat that we are skeptics?

Skepticism is part of science, that we do know. Methodology, experimentation, and objectivity are also part of science. Yet we don't walk around saying we are "methodologists" or "experimentists" or "objectivists."

Communications media require high ratings, an audience, and money. First and foremost, they are in the entertainment business, and are only secondarily a means of providing information. It is not surprising that skepticism has had little presence in the media: the media simply are not the forum for deep thought, reflection, long discourses on profound topics, or (if you'll allow me the irony) rites of rationalist evangelization.

Rating the media according to their degrees of sensationalism, frivolousness, and superficiality, we would probably rank television first, followed by the print media and then, very closely, by radio.

Because of the enormous influence the media wield over society, they still constitute a good place to apply critical thinking to popular topics like aliens, parapsychology, urban legends, astrology, alternative medicines, haunted houses, life after death, and many other phenomena.

I frequently participate in television and radio shows. A problem arises when we present ourselves as "skeptics" and are immediately categorized, labeled, and practically stigmatized by producers and journalists. What baggage comes with the label "skeptic"? *Naysayer, refuter, spoilsport, debunker,* someone who sees the negative before the positive.

When we are invited to appear on a program to debate a supernatural or paranormal topic, we start out at a profound disadvantage: We are automatically labeled by a public that is for the most part credulous, believing, and predisposed to be our adversaries.

Image and Substance

So why do we stubbornly continue to call ourselves *skeptics?* Just explaining what the term means eats up a quarter of a program or a half a page of text, depending on which medium we are appearing in. It's a useless and heavy burden, yet one that we carry year after year.

And what does it get us? After countless appearances on any number of television programs, the titles and categorization still pop up, as if (but not really) by magic: *"Here we have someone who doesn't believe in anything, who denies everything, a skeptic, someone who is against. . . ."*

We know that *substance* is what's important, but we really should not ignore our *image.* We can offer humanity the most important message in the world, but if we don't have an accessible image (including an adequate understanding of how to communicate our message), what we have to say will never reach those who need to hear it most.

We should think of our message as a "dynamic image," something in motion, something that deals with far more than our looks and our words.

Perhaps most importantly, thinking about our dynamic image should bring us to the central question: Is the listener picking up on our true intentions (to inform, to explain, to understand, to search, to investigate)? Put another way: *Am I presenting things in such a way that my listener understands I am not a denier, a snob, dogmatic, nor authoritarian?*

It's time we changed strategies. Why *skeptics?* Before that, we are physicians, astronomers, biologists, magicians, engineers, journalists, historians, instructors, professors, etc. We stand for the values of science, scientific thinking, of objectivity, of truth. And even more than that—we are people, citizens, freethinkers who can express opinions, positions, theories, and ways of thought.

My proposal—considering our appearance in the mass media and knowing that we are dealing here with the future of skepticism—is simple: avoid harmful labeling. Within the context of a skeptics congress, or some specialized journals and magazines, we all know what skepticism is and nobody should avoid the term *skeptic.*

Personally, I agree with Joe Nickell that we ought to be practicing a "bottom-up" skepticism (from facts, arriving at conclusions) and not adhering to a "top-down" version (from the position we hold, arriving at facts). And I think that includes avoiding labeling. If we try to avoid labeling, then what we have to say will be more effectively heard.

We need to investigate, to reach conclusions based on evidence, and to inform the public. And to reach that goal, we don't need to be burdened by the weight of the label *skeptics.*

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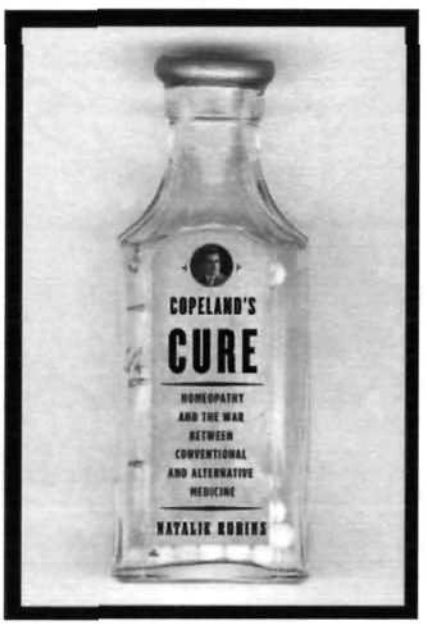
Copeland's Delusions

AVI DOV KLEIN

Copeland's Cure: Homeopathy and the War between Conventional and Alternative Medicine. By Natalie Robins. Alfred Knopf, New York. 2005. ISBN 0375410902. 352 pp. Hardcover, $24.95.



Speaking in 1842 at the Boston Society for the Diffusion of Useful Knowledge, famed physician and essayist Oliver Wendell Holmes took up the topic of "Homeopathy and Its Kindred Delusions." Among them, explained Holmes, was the conjecture that seven-eighths of all chronic conditions were caused by syphilis. It was an issue, he warned, "one does not care to handle without gloves."

Natalie Robins has neither Holmes's inhibition nor his wit. But what she does have—an agreeable narrative style and enthusiasm for archival research—is nearly as rare and makes *Copeland's Cure* the best addition to the health quackery literature in some time. Until now, Senator Royal Copeland (1868–1938), homeopath, ophthalmologist, and pitchman, has been treated by historians as either a charlatan or a historical accident who managed through assuredly dubious means to carve out a critical exception for homeopathy in the 1938 Food & Drug Act. Robins's extensive research suggests a much more complex man whose interests and intents were transparent and, perhaps most important, sincere.

Robins emphasizes that homeopathy was once considered a modern and scientific view. There were plenty of good reasons in the nineteenth century to be skeptical of orthodox medicine: Civil War hospitals, with which too many had first-hand experience, more closely resembled abattoirs than asylums, and evidence from the 1832 and 1849 cholera epidemics suggested lower mortality rates for homeopathically treated victims (if only because they weren't aggressively treated with chloroform). A certain mania for homeopathy set in after the war, particularly in rural areas where natural remedies were already preferred, and by the end of the century the country had 14,000 practicing homeopaths to complement 80,000 medical doctors. Many states even maintained two equally funded medical schools.

Still, by the time Copeland (class of 1889) arrived at the Homeopathic College at the University of Michigan, healthy relations with the "allopathic" students were already plagued with historical distrust and occasional fistfights. Recent medical breakthroughs, especially the germ theory, pointed toward greater complexity in treatment, while homeopathy, which only fifty years earlier had led medicine out of the bleeding and purging era with its mantra of "like cures like," suddenly seemed quaint. The American Medical Association (AMA), for its part, expelled homeopaths in 1847, forbade physicians from associating professionally with "irregulars," and generally poked fun at its "highly poetic and romantic nature." By 1910 the AMA's Flexner Report would decry the state of American medical education and force the rapid consolidation of medical schools, none to the advantage of the homeopathic facilities, which found it harder to maintain state funding.

Upon graduation, Copeland quickly established fame and leadership in both the homeopathic and medical communities. His skill as an ophthalmologic surgeon was noticed early on, as was his copious grasp of the Homeopathic Pharmacopoeia, of which he was soon regarded as an expert. With his career running smoothly he avoided partisanship, almost to the point of pandering, in the ongoing dispute between the fields. To his mind he was a physician with a bonus set of therapeutic skills. And while he maintained that the law of

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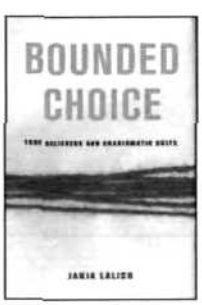
similars was "as fixed as the law of gravitation," he rejected the "purist" view that a mysterious "life force" propelled homeopathic healing. He was, therefore, a natural and ideal champion for an unproven science under attack, and after graduation he took on a series of leadership roles with the American Institute of Homeopathy (AIH).

One of homeopathy's biggest concerns was being misbranded as "quackery." Public sentiment against unregulated medicine was starting to turn with the century, and so the best defense was a violent offense. Copeland, as president of the AIH, continuously railed against chiropractic, aromatherapy, and "the patent-medicine advertiser and manufacturer, the vilest man on the face of the earth." Later, after winning election to the United States Senate, he would make homepathy's last, and most effective blow against misunderstanding: A stipulation in the federal register that his beloved Homeopathic Pharmacopoeia was the legal equal of the standard United States Pharmacopoeia, subject to the same regularity deference.

In 1938, feeling voter heat after 107 people died from ingesting adulterated sulfa drugs, Congress approved "Copeland's Bill," which, in addition to taking notice of homeopathy, created new labeling and safety requirements. Previous accounts have suggested that in its eagerness to pass a bill the Congress overlooked what it otherwise would have opposed. This is not quite correct. Robins, perhaps the first to have gone through the AMA's archives on the issue, shows that the Congress was not the honest dupe some have suggested. "What motivates the proposed recognition of such an archaic volume is impossible to understand," the AMA wrote in its twenty-four-page legislative report—and if Congress acted too hastily in adopting the 1938 Act, suggests Robins, they certainly didn't do so without fair warning.

And thus, despite Holmes's diagnosis, homeopathy did not succumb. Indeed, the National Institutes of Health is presently investing millions of dollars in research to investigate the "pregnant novelty" of curing fibromyalgia and prostate cancer with infinitesimal dilutions of natural herbs. But for this our own senators, not Copeland, must be blamed.



The Social Context of Cults

KARLA McLAREN

Bounded Choice: True Believers and Charismatic Cults. By Janja Lalich. University of California Press, Berkeley, California, 2004. ISBN: 0-520-23194-5. 329 pp. Softcover, $21.95.

When sketchy reports of a mass suicide in upscale Rancho Santa Fe (near San Diego) began circulating on March 26, 1997, sociologist and cult researcher Janja Lalich felt a knowing chill. Lalich stayed up all that night, calling fellow researchers on the East Coast, monitoring media reports, and trying numerous times to get onto the heavily trafficked Web site of the group she knew as "Bo Peep," a UFO cult she had been studying for the past three years. When she finally gained access to the site, Lalich recognized the Bo Peep group, phoned the San Diego police with information about them, and called one family whose daughter was among the deceased. By the next morning, she listened sadly to news reports confirming what she already knew. Thirty-nine members of the Bo Peep group, which the media had rechristened Heaven's Gate (lifted in part from the name of their Web site, heavensgate.com), had committed mass suicide in order to fulfill their twenty-two-year mission to transcend beyond the need for human bodies.

Lalich, an assistant professor of sociology at California State University Chico, and author of *'Crazy' Therapies*, fielded endless calls from the media in the following weeks and months, and did what she could to explain the cult's seemingly inexplicable act. However, Lalich was concerned that the public's understanding of cult members and leaders was incorrect at best, and misleading at worst. Cult members have traditionally been characterized as psychologically unbalanced, unintelligent, uneducated, easily led, blinded by faith, or manipulated by their leaders. Lalich knew from direct personal experience that none of this was true. Lalich is not just a cultic studies scholar, she was also a high-ranking member of a leftist political cult (the Democratic Worker's Party, or DWP) for ten years.

Lalich's newest book, *Bounded Choice: True Believers and Charismatic Cults*, puts her unusual experience and extensive scholarship to excellent use. *Bounded Choice* presents a unique comparison of two charismatic cults: Heaven's Gate and the DWP—one a Christianity-infused UFO cult, the other a deeply atheistic Marxist political collective. In this fascinating study, Lalich combines inside knowledge of the everyday life of cult members with a scholarly capacity to clearly illuminate the intricate social processes involved in cult formation.

This comparative study of two seemingly different (yet essentially similar) groups challenges nearly every assumption made about cults, "brainwashing," charismatic leaders, and the psychological

Karla McLaren is author of nine titles in the metaphysical genre. She recently ended her New Age career and is currently pursuing a master's degree in sociology; she wrote "Bridging the Chasm between Two Cultures" in our May/June 2004 issue.

profiles of cult members. *Bounded Choice* shows that cult members are not strange, nor psychologically impaired (at least when they enter the group), nor even moderately less intelligent than anyone else. In fact, Lalich's revolutionary approach reveals that intelligence, curiosity, psychological strength, idealism, commitment, and heightened political and social awareness may indeed be *prerequisites* for cult membership.

Bounded Choice also shows, surprisingly, that cult formation is not an unusual or nefarious process. In fact, it is similar to nearly every type of group formation, and is especially similar to the kinds of formations that occur in "total institutions" such as schools, fraternities and sororities, the military, mental institutions, and monasteries.

Lalich's insightful "bounded choice" framework articulates the differences between normal group formation and cultic formation through the use of four crucial social dynamics. The first is charismatic authority that creates powerful emotional bonds between leaders and followers. The second is a transcendent, totalistic belief system that attracts and reinforces high-commitment individuals and behaviors. The third is a system of control, hierarchy, and regulatory mechanisms that ensure group cohesion. And the fourth is a system of influence that trains group members to adapt their thoughts, attitudes, and behaviors to the beliefs espoused by the group.

One of the most interesting revelations is that cults are formed not through trickery, sleep deprivation, brutality, or mind-control, but through dedicated relationships and conscious agreements between members and leaders. With this bounded choice framework, Lalich shows how seemingly irrational or self-endangering decisions are actually an intrinsic part of a social context that makes perfect sense to cult members. In fact, Lalich states that these decisions are often consistent with cult members' highest aspirations.

This book will certainly reshape scholarly thinking about cults and cult members. However, because it is accessibly written, it will also be important to former cult members, families of current members, therapists, and anyone who wants to understand how a normal person can become a fervently dedicated true believer. In this era of increasing factionalism and religio-political extremism, *Bounded Choice* can also help us understand how some true believers can be transformed into fully deployable agents who may commit their very lives to extreme or violent causes.

As a "failed" former member of a New Age cult (I was kicked out for disobedience), I was fascinated to read about the day-to-day workings of two other cults: one religious, the other atheist. Lalich's clear-eyed approach to the intricacies of cult formation helped me to deepen and expand my understanding of how and why groups form, cohere, or disband. Lalich's balanced, empathetic treatment of leaders and followers in these groups does what excellent writing should do: it helps us see ourselves. Most important, it helps us challenge myths about cults, and enables us to see cult members not as lost or expendable souls, but as valuable people whose absence robs us of potentially committed, idealistic, and visionary members of society.

With her combination of extensive scholarship and extensive personal experience, Lalich is perhaps our best available interpreter and theoretician of the cult phenomenon.

Thoughts on Thought Control

JOE SZIMHART

Brainwashing: The Science of Thought Control. By Kathleen Taylor. Oxford University Press, New York, 2004. ISBN 0192804960. 324 pp. Hardcover, $34.50.

Challenging is one word I will use to describe Kathleen Taylor's book *Brainwashing.* Taylor challenges us all to "stop and think" in more ways than one, and for more than obvious reasons. Her goal is to tackle the unwieldy topic of brainwashing within a social psychological frame as a legitimate pursuit of brain science.

Taylor is a research scientist in the physiology department of the University of Oxford. Anyone not familiar with the history of the term *brainwashing* will benefit from her summary of its origin with writer Edward Hunter in 1950 and its subsequent insertion into the dialogues on influence, advertising, reeducation, torture, thought reform, and cults. She recounts what we know of early government experimentation with mind control. She relies heavily on the insights of Robert J. Lifton's seminal work *Thought Reform and the Psychology of Totalism,* about brainwashing in communist China.

Following a more materialistic and deterministic route along scientific principles, Taylor argues convincingly that the self is malleable and more like clay than rock. She takes us into neurological territory about how reason works. She considers the mutability of cognitive webs that form the basis for consciousness to be both a blessing and a curse. When properly exercised the brain supports a healthy self that can "stop and think" before falling under the sway of undue influence. When neurological

Joseph Szimhart has written extensively on cults.

pathways and "cogwebs" (cognitive webs of neurons with their dendrites, axons, and synapses) become rigid or overly fixed, new information cannot impress the brain easily to stimulate a creative response or improvement of the overall free expression of self. In short, some brains are easier to wash than others, while others that might need washing for their own good will not budge.

Taylor defines *freedom* as the ability to predict the future and react to adverse or difficult stimuli. She illustrates how stubborn, ill-educated, or brilliant persons might have strong pathways of pre-cortical and general brain functioning, but these very pathways might incline them to choose a harmful activity or ignore a healthy one. Brainwashed persons have similar rigid cogwebs. Through neurological science, Taylor shows how ethereal beliefs prevent more complex brain functions unless something surprises or shocks the person to rethink or reorganize pathways of response. To create a useful brain pathway we need repetition so that thought patterns facilitated by neural interaction can associate and flow properly toward decisions. However, she warns that influence can work by stealth, tricking the brain into accepting incorrect information.

In Part I she examines "Torture and seduction," and how change agents use different approaches to influence and brainwash. Using infamous, well-documented cases like Jonestown, Patty Hearst, and the Manson Family, she lays down a basis for what Part II ("The traitor in your skull") explains with brain science and neurology. Part II Chapter 8 shows that we have an enormous capacity for self-deception, false memory, and confusing (or not recognizing) data. Taylor takes the reader through the brain and describes the decision-making process.

Part III examines "Freedom and control," how we might lose them, and how we might protect them by understanding how the brain works. "Your susceptibility to brainwashing (and to other forms of influence) has much to do with the state of your brain," Taylor writes. In this section Taylor proposes a FACET response to help avoid undue influence and totalist thinking. FACET is an acronym for Freedom, Agency, Ends-not-means (human beings are not merely means to an end but important in and of themselves), Thinking, and Complexity.

FACET (based on Robert Lifton's eight themes of ideological totalism) is essentially a liberal approach to life, but one that demands effort and education to be effective. For example, Lifton's first theme is *milieu control*. As an antidote, "FACET emphasizes not only individual over group rights, but individual agency." In Chapter 14, "Science and Nightmare," Taylor discusses potential abuses of human freedom stemming from the very science explored in the book. She cites movies like *The Matrix*, *Blade Runner*, and *Soylent Green* as examples or metaphors of very real scenarios for a human future gone awry if we allow our brains to fall into totalist patterning.

I enjoyed the book as a challenge to think about a sorely neglected topic. Some religious studies scholars might find the medical model of brainwashing troubling, but a careful reading indicates that the author is under no delusions about how much we know. The FACET model relies on informed consent and self-education, yet she warns, "individualism has its limits." There is strength in numbers for, after all, we are social creatures, and our brains depend on interaction with our kind to sustain a healthy reality perspective. I applaud Taylor for opening up the brainwashing debate again. It seems that we in western society have been scared off or horrified by the very notion since films like *The Manchurian Candidate* and *A Clockwork Orange* first appeared to augment stories about horrible "mind control" experiments.

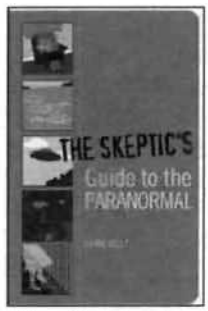
Taylor makes an important distinction that she feels is lost on many skeptics who have a knee-jerk reaction to religious practice and faith. She takes issue with those who believe that "Science functions like a well-regulated brain, religion like a psychotic one."

Taylor makes an important distinction that she feels is lost on many skeptics who have a knee-jerk reaction to religious practice and faith. She takes issue with those who believe that "Science functions like a well-regulated brain, religion like a psychotic one." To her, brain research demonstrates that "Much religious practice is not concerned with abstractions, but with real life, testing out new approaches to social problems, experimenting with novel solutions, learning and applying ideas from around the world." In other words, the more sophisticated faiths act reasonably within their ethereal core ideas. Taylor's concern is with any human venture (be it science, religion, or politics) that restricts brain function from creative "stop and think" activity, and which becomes little more than another exclusive cult. □

Listing does not preclude future review.

Adapting Minds. David J. Buller. The MIT Press, 2005. 550 pp., $34.95, hardcover. According to David Buller, the common approach of evolutionary psychology (as espoused, for example, by Steven Pinker in *The Blank Slate*) is: "1) Find an evolutionary adaptive behavioral trait in humans common to different social environments; 2) Note the similarity in behavior; 3) Postulate a common module adapted from the common demands of the Pleistocene; and 4) Deliver the affected individuals from responsibility for the behavior." Buller, an associate professor of philosophy at Northern Illinois University, challenges the assumptions, research, and conclusions of evolutionary psychology, instead arguing that human minds are continually adapting over both an individual's lifetime and evolutionary time.

Fantastic Flight. John M. Collins. Ten Speed Press, 2005. 176 pp., $16.95, softcover. *Fantastic Flight*'s unwieldy but undeniably accurate subtitle is "Make and fly 24 original paper airplanes using no glue or cutting." Author John Collins combines his interests in origami and kites to produce a followup to his book *The Gliding Flight*. He offers up paper-airplane designs with curious names like The Pelican, The Bat, The Super Canard, The Phat Glider, and The Loop. Each has a distinctive flight pattern, and one, Collins claims, can fly for over half an hour (presumably not just from the top of a building, buoyed by an updraft). The book is of interest as a fun introduction to science and the principles of aerodynamics, as the author describes why different wing designs result in different flight patterns. A good book for children or for adults with too much paper lying around and extra time on their hands.



The Skeptic's Guide to the Paranormal. Lynne Kelly. Thunder's Mouth Press, 2005. 260 pp., $14.95, paperback. Lynne Kelly's *The Skeptic's Guide to the Paranormal* "offers a bite-size, nonacademic approach to debunking hugely popular superstitions and mysteries." Kelly, a math and science teacher, covers about two dozen topics, including crop circles, alien abductions, reincarnation, spontaneous human combustion, psychics, astrology, monsters, and the Bermuda Triangle. Each topic is indeed presented in bite-size chunks for the layperson, but as a result, the discussions are at times frustratingly superficial, sacrificing clarity and accuracy. Despite these debits and others (e.g., sporadic references, the lack of an index) the book is useful as a layperson's survey of paranormal topics.

—Benjamin Radford

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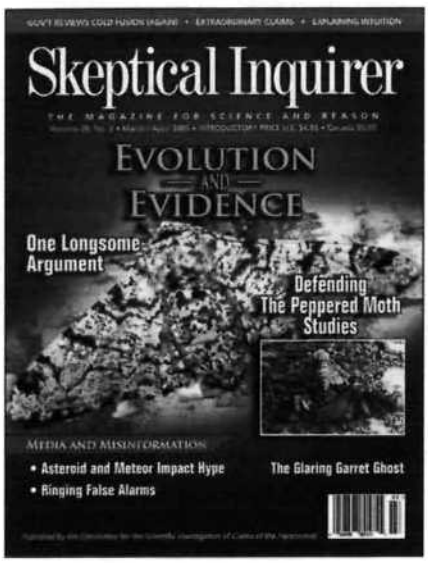
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Evolution: One Longsome Argument

Dennis Trumble ("One Longsome Argument," SI, March/April 2005) may derive some comfort from the fact that in Britain, the evolution/creation argument has been won by the evolutionists. The British are not particularly rational or scientific-minded—there is a widespread belief here that genetically modified foods are poisonous. But here, evolution is assumed as unremarkable fact, except among militant creationists, a small minority that can only fill a meeting hall by busing adherents in from all over the country.

In the U.S.A., alarming numbers of biology teachers reject evolution; in Britain, practically none do. Nature-study books, popular in infant-school libraries, assert that all living things are related. Six-year-olds, enjoying *The Flintstones* television show, see it as a joke that humans and dinosaurs are shown to exist at the same time. Seventeen-year-olds who opt for the A-level biology syllabus are assumed to know about evolution, ready to study the natural-selection theory.

Dennis Trumble may be mistaken, however, in presenting as an argument against creationism that "physical adaptations to environmental pressures have been documented in hundreds of modern species." Adaptive change within species is not in itself evidence that species are descended from other species.

Donald Rooum
London
England

Dennis R. Trumble's critique of the arguments against evolution is very thorough and excellent. His discussion of the absence of fossil evidence of "missing links" as a form of *argumentum ad ignorantiam*, however, may be too erudite for the average creationist.

A simpler, more concrete explanation of the missing link, I believe, could be made as follows: A transitional species created by adaptive genetic changes will be few in number and extremely rare among fossils until a series of adaptive changes results in a new dominant species.

By analogy, imagine an archeologist looking for the transition from the horse-drawn carriage to the automobile in a large lot where carriages and automobiles have been dumped for the past 150 years. On the bottom layer, he would find many carriages, and above, he would find many autos and auto parts starting with the first popular car—the Model T Ford. But what are his chances of finding one of the first experimental cars that looked like a carriage with a motor attached, the automotive missing link?

David W. Briggs
Augusta, Maine

Dennis Trumble's article, "One Longsome Argument," was the most recent occasion for SKEPTICAL INQUIRER to bang its head against the wall, asking, "Why is the message (about evolution) not getting through?" I notice that sometimes this semi-ritualized exasperation creates the impression that the resistance to evolution is unique. In many ways, of course, it is. The resistance to evolution is organized and aggressive in ways that are unique. But there are other elements of the modern, scientific picture of the world the rejection of which by large numbers of people should similarly vex skeptics.

The nineteenth century saw at least three prevalent ideas about life and humanity crumble: 1) special creation, 2) vitalism, and 3) mind-body dualism. The twentieth century saw all three demoted from "discredited theory" to "folk-science relic" before the relentless advance of Darwinism, physiology/biochemistry/genetics, and the mind sciences (not to mention philosophy, which hadn't been able to formulate a coherent dualism in the three centuries since Descartes). In the twenty-first century, creationism is primarily a test of political will. Vitalism and dualism, however, are quite casually endorsed in news and entertainment media without any political ax to grind; they are implicitly accepted in many ethical and legal debates over biomedical issues, and they openly dominate "alternative medicine," religion, and popular self-help.

Now, arguably, these three ideas do boil down to the single issue of evolution. A deep understanding of evolution encompasses life and mind, and indeed, a careful reading of the opposition to evolution reveals that its fundamental objection really is to materialism generally. On a practical level though, the widespread acceptance of life essences/forces and immaterial souls can be treated as separate species of ignorance. Adherents to these views rarely fight pitched, public battles the way creationists do or resort to the same kinds of tactics, and this is part of the reason why skeptics usually don't regard the innumerable manifestations of vitalism and dualism as campaigns to save particular, long-dead theories. But perhaps we should.

Lyle Crawford
lylecrawford@gmail.com

Dennis Trumble correctly states that the second law of thermodynamics has often been used, incorrectly, in attempts to disprove the theory of evolution. Unfortunately, he then proceeds to make seriously incorrect statements of his own concerning the second law of thermodynamics, claiming that it is a statement about energy. It is not; it is about entropy.

Actually, the notions of thermodynamic entropy and statistical entropy (there's no such thing as "logical entropy"), which the author wishes us to keep separate, are really different aspects of the same thing: the former presents a macroscopic, the latter a microscopic description of nature. The second law actually states that in adiabatic systems (those which exchange no heat with their surroundings) the entropy cannot decrease. Thus, an adiabatic system will spontaneously evolve toward a more probable state, thereby increasing its entropy, possibly at constant energy.

The real problem with the misuse of notions of entropy in the context of evolution is the erroneous belief that the law of increase of entropy applies to all types of systems; no, it applies only to adiabatic (or isolated) ones. In the general case, however, entropy can perfectly well decrease, for instance, in open systems, which can thereby become spontaneously ordered, life being the prime example.

Didier de Fontaine
Professor Emeritus of
Materials Science
University of California
Berkeley, California

I agree with everything said by Dennis R. Trumble in his article, and I gained a few new insights. However, I find a problem with what he did not say. In his discussion of entropy, he correctly pointed out that the biological system of our planet is not energetically closed. However, he failed to mention the process through which most of that energy enters the system.

He did point out that energy comes from the sun. But a person who is not familiar with biology might think that it is the heat of the sun that is important. He/she could not know that over 99 percent of the energy that enters our biological system does so by way of photosynthesis. It is that energy that has driven much of biological evolution. Energy entering through photosynthesis did not account for the origin of life, but as Mr. Trumble points out, this is not the point of his discussion.

It is the photosynthetic process of trapping solar energy that has made the complex life that has evolved on this planet. Without that, we would be restricted to what we find at hot springs, both on land and under the sea. Photosynthesis is the major energetic trapping process that destroys the faulty entropy arguments of the antievolution crowd.

John E. Hendrix
Plant physiologist (Professor Emeritus)
Colorado State University
Fort Collins, Colorado

Too long has evolution been the butt of false analogies of the "it's as likely as a whirlwind in an auto-parts store creating a Mercedes" variety. In my view, entropy can be better described as a force, just like any other physical force, driving the change of matter and energy over time.

On the other hand, a discussion of entropy can be used to disprove Intelligent Design. Michael Behe (an Old Earth creationist), has proposed that the genes for each individual today were emplaced in the first created living organism, which then multiplied and diversified according to the Designer's implanted plan over the course of geological history. Of course, this is absolute nonsense, since entropy dictates that the original material, especially those unused portions of it pertaining to the development of mammals that would not appear for billions of years, would degrade hopelessly in a very short period of time and completely disappear.

Sir Arthur Eddington, in his Gifford Lectures of 1927, said: "The law that entropy always increases holds, I think, the supreme position among the laws of Nature . . . if your theory is found to be against the Second Law of Thermodynamics, I can give you no hope, there is nothing for it but to collapse in deepest humiliation."

The general public, which intuitively understands entropy, typically thinks of evolution in terms of the "auto-parts whirlwind model," and as long as this is so, proponents of evolution debating in public can easily be made to look ridiculous. Scientists must make it clear to all concerned that entropy guarantees that all systems, including biological ones, will evolve and that therefore, only evolution, and not ID, is consistent with thermodynamics' second law.

Peter Lugten
Lindenhurst, New York

More Pro-evolution Tactics

Most people who argue evolution vs. "Intelligent Design" are not likely to change their minds. Instead of arguing, I now take a different tack.

"You know," I say, "if you're going to question evolution, it makes just as much sense to question gravity—which is only a theory, by the way. Sure, there are well-known scientists like Charlie Darwin who just assume there's a 'fixed law of gravity,' but there are also respectable scientists who think there are problems with the theory of gravity. Maybe the correct theory is really 'intelligent attraction.' Shouldn't we be fair and give *both* views a chance?" (See www.intelligentattraction.com.)

Steve Isaacson
Seattle, Washington

It occurs to me that any time "Intelligent Design" is considered, it ought to be referred to as "extraterrestrial design" or "alien design." To remain in the realm of science, this is the only thing that "Intelligent Design" can mean. For them to say, "We don't mean aliens, we mean God," then brings things squarely under the constitutional umbrella (the separation of church and state). Why are scientists not making this distinction?

I think skeptical and critical-thinking organizations ought to cease using the words "Intelligent Design" altogether. I've heard this same view expressed in a slightly different way before, and I definitely think it's worth considering. If you force them to define—or correct—the meaning of *intelligent* in "Intelligent Design," you force them to show their religious cards.

Brent Faul
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Evidence and Impacts

In "Hyperbole and Media Reports on Asteroids and Impacts" (March/April 2005), David Morrison lets his opinions on the Cretaceous/Tertiary (K/T) boundary mass extinctions color his discussion on media reporting of science. For example, Morrison states (p. 31), "*Most scientists consider it to* be exceedingly unlikely that the dinosaur extinction was unrelated to the global K/T event." So far, so good. I agree, as would most other scientists involved in the study of these extinctions that this is a fair and substantiated assertion.

What Morrison does not tell us is that there were two other "global events" at that time that are as widely accepted as having occurred—the greatest global loss of shallow seas in the past 250 million years and the eruption, over several million years, of the Deccan Traps on the Indian subcontinent.

What Morrison next writes (p. 31) is not as nearly widely accepted, constituting hyperbole on his part: "In addition to the coincidence in time and increasing evidence that the dinosaur extinction was abrupt, we think we understand how the Chicxulub impact killed large land animals by a combination of [a] brief global firestorm followed by months of cold." Note that the latter part of this statement is simply a proclamation that is not explained. Neither is it explained that the claims of "a brief global firestorm followed by months of cold" have been called into considerable question by studies showing a lack of charcoal at the K/T boundary and the fact that ectothermic vertebrates who should have been adversely affected by such cold are among the most numerous survivors.

The evidence for an abrupt extinction of dinosaurs is especially flimsy. One study in the latest Cretaceous Hell Creek Formation of North Dakota purports to show that dinosaurs abruptly disappeared at the K/T boundary. When we read the fine print, we find that the remains of only two dinosaurs could be identified to the generic level in the highest five meters of the formation. Nothing is shown of the fate of the other eighteen or so genera and species of dinosaurs known to be present in the formation. This is the best that the evidence gets for claims of an abrupt

extinction. This should not be interpreted to mean that we can say dinosaurs died out gradually, rather the evidence is simply too poor to make any claims as to the rapidity of these extinctions. We do have mounting evidence for a rapid temperature decline immediately before the K/T boundary with a concomitant sharp decline in plant, mammal, and turtle diversity.

Far from the simplistic portrait given by Morrison, this is a very noisy time in earth history that is only now beginning to be understood. Morrison mentions two other important ideas in earth history—plate tectonics and deep time. When these were discovered, studied, debated, and finally accepted, there were periods of "shake out" when extraordinary claims were set aside. This is the interval through which the ideas of earth-crossing impacts are traversing. The claim that a rock fell to earth instantly killing dinosaurs and many other species must be viewed skeptically.

J. David Archibald
San Diego, California

David Morrison responds:

David Archibald's letter is an excellent illustration of the complexities facing the science journalist. In cases of fundamental (paradigm-shifting) new concepts, unanimity among scientists is unlikely. There are always a few holdouts, even when a scientific consensus is reached. This happened in the case of the plate tectonic revolution in the 1960s as well as the new catastrophism in the 1980s. A current example concerns evidence of anthropogenic global warming, which is unfortunately further complicated by large financial interests that might suffer if a relationship is established between fossil-fuel consumption and climate.

In the case of the dinosaurs, one issue concerns the nature of scientific evidence. Archibald is correct that dinosaur fossils are too sparse to establish exactly when the last dinosaurs lived. In contrast, the association of the global K/T extinction (defined by smaller and more numerous fossils) with the Chicxulub impact is solidly established, and the instantaneous nature of the extinction of the microfossils is clear. If microlife goes extinct instantly, it is reasonable to infer that the macrolife does too. The burden of proof falls on those who think the dinosaurs did not share the fate of their contemporary smaller life forms. But I agree with Archibald that in the strictest sense, we will never be able to prove exactly what killed the dinosaurs. The evidence is circumstantial—as is much evidence in the historical and observational sciences.

I do not mean to condemn minority views. It is probably good for science that Archibald and Keller and a handful of other impact skeptics continue to publish and defend nonimpact models for the K/T extinctions. What I regret is the failure to recognize the existence of a scientific consensus, whether the subject is plate tectonics, dinosaur extinction, or global warming. Of course, the consensus could be wrong, and we don't make scientific decisions by majority vote. Usually, however, the consensus is largely correct when dealing with a hypothesis that has been subject to intensive debate and testing over several decades. The risks of rushing to premature consensus are well recognized, but there are dangers also in failing to recognize a scientific consensus when it emerges.

A skeptical attitude is useful (perhaps essential) in science, but not a contrarian or know-nothing attitude. It is a disservice to society to assert that the end of the dinosaurs or the onset of global warming are wide-open scientific issues. Evidence does matter, and data (even imperfect circumstantial data) can point the way to correct answers. I cringe whenever I read the journalistic phrase "many scientists believe that" prefacing a statement about mass extinctions or global warming. These well-studied scientific questions should not be treated as issues of belief. As a scientist, I have no problem with Archibald's minority statement, but as a communicator, I am saddened that the existence of a handful of impact deniers is often used to undercut public understanding of a robust scientific consensus on a subject—the death of the dinosaurs—of considerable public interest.

I wonder how often scientists, in talking with journalists, ever say, "This is my own view, but it is a minority position. Probably 90 percent of the scientists in this field would not agree with what I am about to say." Or how many journalists ask the scientists they are interviewing if their opinions are broadly supported by their colleagues.

It is hard to think of or write anything that the greats have not already thought of and said better. Take Schopenhauer. He said, "All truth passes through three stages: first, it is ridiculed; second, it is violently opposed; and third, it is accepted as self evident." The theory that the impact of a meteorite destroyed the dinosaurs has passed through exactly those three stages, though something that is "self-evident" still is not proven in Popper's sense.

When the meteorite-impact theory first appeared in *Science* magazine in 1980, the majority of paleontologists regarded it as unworthy even of consideration. Why should they pay attention to a solution to a problem (that they had been unable to solve for 150 years), proffered by an arrogant physicist and appealing to the *deus ex machina* of a rock the size of a mountain falling out of the sky? When they did get around to the Alvarez theory, they chose ridicule—at least the nutty idea might be good for a laugh. The classic example was an article in *Paleobiology* by Clemens, Archibald, and Hickey. They drew their title from T.S. Eliot: "Out with a Whimper, Not with a Bang," and ended with a little couplet:

> This is the way Cretaceous life ended,
> Not abruptly but extended.

When they wrote that article in 1981, geologists had not discovered the Chicxulub crater nor most of the vast amount of evidence that supports the meteorite-impact theory. That evidence has caused most, but not all, paleontologists to accept the theory, unproven as it still is. One can discuss each piece of the evidence: my favorite is the lead isotopes in K/T zircons. They are shattered, not of volcanic origin, and establish beyond reasonable doubt a genetic link between the impact and the K/T boundary clay. But one does not have to get into all that.

Just note the existence of a giant impact crater that has exactly the same age as the K/T mass extinction. That is either coincidence or cause and effect. Stephen Jay Gould, another great, said it well: "my first-class prejudice is not to accept coincidence on that scale." The burden of proof in this debate has shifted to those who doubt the theory.

James L. Powell
Executive Director
National Physical Science Consortium
Los Angeles, California

Media False Alarms

I really enjoyed reading Benjamin Radford's article, "Ringing False Alarms" (March/April 2005). After the September 11, 2001, attacks, there were so many false alarms, and we constantly received those terrorist-level alerts that practically drove me nuts, and I would see my girlfriends crying after hearing the alerts, saying that it wasn't over yet. Then, of course, there was the threat that Iraq had WMDs, and that never panned out. Strange how we know that North Korea has WMDs, and we hardly ever hear anything about that. Everytime I turned on CNN, there was something about anthrax, missing children, killer bees, SARS, West Nile virus, Mad Cow disease. Everything gets over-exaggerated,

and they do this to keep our attention and get high ratings. Remember when we would hear things about Legionnaire's disease breakouts and cancer clusters? I am waiting for the great smallpox scare. When will it all end?

Sharon Diane Roberts
Port Orange, Florida

Comforting Thoughts about Death

Greta Christina's essay ("Comforting Thoughts about Death That Have Nothing to Do with God," March/April 2005) is a sensitive rationale for dealing with the idea of inevitable death. Her treatment is beneficent, because it communicates intelligent ways to think about death alongside traditional biblical accounts. That is, arguments promoting atheism and/or agnosticism appear truncated often not because of faulty logic but because such views typically omit emotionally relevant alternatives to the notion of a heavenly hereafter. Christina's analysis couched in time-series language gives solace to those who, as she expresses in her preface, "don't believe in God or an afterlife" or "believe that the existence of God or an afterlife are fundamentally unanswerable questions," etc. Such solace relies in part, ironically, on Piaget's (1975) concept of "object performance" (the child's conception of the world). Her perspective is compelling, because while confronting the idea of death, it gives meaning to the value of life. Christina examines mortality existentially, and that *is* a "comforting" thought.

William F. Vitulli
Professor Emeritus of Psychology
University of South Alabama
Mobile, Alabama

I am impressed by Greta Christina's article about rethinking death in a positive way. Her idea of our souls dissolving in the world-soul, the way our bodies do in the ground, is as logical and as unproven as the alternatives of eternal life or rebirth.

I disagree with her statement that we "flinch away from and refuse to accept or even think about" death and what comes after. I am a senior in my eighties, and for me and many of my friends, death is often a friendly, positive event that quite frequently means the end of constant pain. Our nursing homes are full of people who exist on painkillers as their daily bread. There have been cases where a court order was needed to discontinue a life-support system when the person had been on it senselessly for years.

We live in a society where one is not supposed to admit that dying might be release. Greta Christina, you are way ahead of our conservative Christian-era thinking.

I have sometimes wondered why we take myths and old beliefs so literally. I have always wondered: What happens when a soul is released by death?

I am old, and I like to think it happens as Greta Christina suggests, or poetically speaking: "like a drop of water finds its way to the ocean, thus our soul will also find its way."

Luule Sova
Vancouver, British Columbia
Canada

Greta Christina's "Comforting Thoughts about Death" don't comfort me. Her "first thing" equates the temporality of five-spice chicken with that of death. I feel no loss and experience no death after having eaten five-spice chicken. Even if I could never eat it again, I wouldn't care much. However, if I could never see again, walk again, think again, or live again, now those are losses I would care about. The alternative to physical death, not the death of moments in time, isn't "time frozen" but rather life eternal. Unfortunately, life doesn't work like that.

Her "second thing" compares the third dimension with the "fourth." There's an enormous difference between leaving Chicago and leaving a segment of time (as wonderful as Chicago is). Chicago still exists when you leave; yesterday doesn't. You can always return to Chicago or to someplace even nicer (hard as that is to imagine). You can't return to 1961 through 2004. Our time on this planet *is* trivial; our lives *are* trivial compared to the vastness of life and of the universe. Get used to it. Accept it.

Both of Ms. Christina's "things" trivialize life and death. I feel sad when I contemplate my future and its inevitable end. That others will live to fly in cars and have identity chips in their brains provides me no solace. I do take comfort, however, when I truly live in and enjoy this very moment. No, not that one. Not the next one. Not a millisecond before or after this one. Just *this* one. The only real one. Right now.

Richard Epstein
West Hartford, Connecticut

Hats off to Greta Christina. I was so impressed with the first part of her argument that I poetized it. The length may disqualify it from appearing in the letters section, but perhaps you could send it to Greta Christina.

Leland Waldrip
Amissville, Virginia

Thank you. We did.

—Editor

Greta Christina replies:

Thanks to everyone who wrote—both supporters and detractors. I think dealing with death in the absence of a belief in God or an afterlife is both difficult and important, and I think skeptics need to talk about it and debate it, both with believers and with one another.

To those who didn't find comfort in my view of death, I can't say much other than I'm sorry. I wrote the piece because I personally found the ideas in it useful: they made life bearable and even joyful during a difficult time, and I hoped others might take comfort in them as well.

Judging from the response, the piece did seem to strike a chord with many people—but obviously different people have different ways of facing death and its finality, and this piece wasn't meant to be the final word on the subject.

I do want to reply in a bit more detail to Mr. Epstein, as I think we may agree more than he thinks. It wasn't my intention to equate life with five-spice chicken—I was using the latter as a metaphor for the former, a small-scale example of something we need to let go of in order to experience. And while it's true that leaving a physical place and leaving a moment in time are qualitatively different, that doesn't negate my point. Yes, 2004 no longer exists, and we can't go back to it—but it will always have existed. Death ends our time on Earth, but it doesn't erase it. (Besides, you can't strictly speaking go back to Chicago either—physical places change, and the Chicago that you leave disappears the moment you turn your back on it.)

Finally—of course we feel sad in the face of death. I wouldn't try to argue against that; in fact, one of my problems with a belief in an afterlife is that I think it trivializes grief. I was arguing against denial and despair, not against sadness or loss. My point wasn't that death isn't sad—just that it doesn't have to be unbearable.

A Daughter's Intuition

I read "Intuition" (Investigative Files, March/April 2005) with great interest. It is warm and engaging, and I was sincerely happy for Joe Nickell for his discovery of a beautiful

daughter he had not known existed. But nevertheless, I was also disappointed. Nickell recounts a series of factual observations, noted by his daughter, and these gradually added up to an inescapable conclusion. Scientific verification confirmed her hypothesis after daughter and mother joined in identifying the potential father.

Interesting story . . . but very little, if any of it can be attributed to intuition—if we use its conventional definition of "the power of knowing . . . without recourse to inference or reasoning." Here the daughter had ample factual data, and she used skillful reasoning to arrive at an inevitable conclusion. She should be lauded for good observation and logical assessment of all the existing information. I suggest that Joe Nickell's daughter exercised cool intellect, not mystical intuition.

I know Joe personally, well enough to assert that he is a perceptive investigator and objective skeptic, not at all prone to delusion by circumstance. Indeed, his piercing analysis has demystified many a seemingly supernatural occurrence. And it seems that this happy personal account illustrates that even a skillful analyst may find it difficult to arrive at objective conclusions when dealing with subjective personal situations. My best personal wishes to Joe in his newly discovered joy!

Joe Bauer
Florida Keys

Joe Nickell's story about his lost daughter is wonderful; his brief analysis of the incident is excellent. Regarding his references, however, there is one that is conspicuously absent and predates those cited: Carl Jung's *Psychological Types*. In it, Jung defined intuition as perception via the unconscious. It should be evident that Jung's definition contains the facts and scientific basis that Nickell summarized, including the cautions about trusting intuition. Armed with such a definition and a modicum of self-observation, one can derive as a matter of personal experience much of what Nickell cites as recent cognitive-science revelations.

The contribution of science is not to be downgraded, since it is our main method for developing factual, undisputed knowledge. But I think that creative people have long known and relied on the fact that the brain is working in the background on a problem even when the conscious mind is otherwise occupied or even asleep. And insofar as intuitive inspiration refers to factual matters, it is rational that it should be subjected to verification.

As for the charge that intuition is not always right, what human faculty is? Are there no sensory illusions? Logical fallacies? Emotional blind spots? If intuition is seen as a form of perception, it may, like all perception, be right or wrong; further, it is subject to education and honing.

Jung's work is not often praised among skeptics. Yet *Psychological Types* is, in my view, an indispensable part of the educated person's canon.

Pantazis Mouroulis
Glendora, California

Joe Nickell responds:

I appreciate the readers' comments, good wishes, and (there is never enough of this) praise. Regarding my old friend Joe Bauer's point about "reasoning," the sticking point is over whether it occurs consciously or unconsciously. I'm convinced it was largely the latter in my daughter's case, as well understood by the second writer, Mr. Mouroulis.

'Extraordinary Claims' Game?

The whole concept of extraordinary evidence (March/April 2005) is offensive to reason and logic. Perhaps the slogan should read: "Supernatural claims should require supernatural evidence." Or perhaps "Claims of miracles require miraculous evidence." The rules of evidence in these spheres are not the same as those of science, and any attempt to judge miracles by objective means is doomed to frustration. I'm surprised people are still willing to play this game.

According to my dictionary, *extraordinary* means "going beyond what is usual, ordinary or customary." It does not say miraculous or supernatural.

Pigliucci says, "it stands to reason that we need an extraordinary degree of evidence to back such a[n extraordinary] claim." To the contrary, it does not stand to reason. The claims for cold fusion do not require extraordinary evidence; common, old, ordinary thermodynamic evidence will do. The claim that Earth revolves around the sun requires only Newtonian physical evidence. The claim that penicillin can kill germs (surely one of the audacious and extraordinary claims of all time) requires only common bacteriologic methods and very rudimentary clinical observation.

It is time to stop trying to add apples and oranges and time to deliver ourselves from this preoccupation with a philosophic conundrum.

William C. Harvey
Dallas, Texas

Scientists and Politics

In response to Ralph Estling's "Scientists and the Election" (March/April 2005)—I was not aware that Plato was a scientist or that he practiced scientific methodology as Mr. Estling infers.

Although scientists often express their political opinions, I am not aware that I have heard anyone "telling us how to vote." I may have missed it on the news.

Estling states ". . . some scientists occasionally have important things to tell us. . . ." I assume he was being sarcastic using *occasionally* instead of *usually*.

Estling states that our science (is conducted) by "nondemocratic scientific methods," but when we think about scientific methodology, it appears to have a democratic aspect to it. Peer review, approval, and verification are kinds of *voting* procedures that are meant to select the most sensible and qualified propositions (candidates). After all, there is no dictator of scientific truth.

I too "tremble at the thought of scientists governing the world," but I tremble more *when politicians govern without relying* upon the accumulated knowledge of the social and physical sciences.

Estling states it is a "daunting prospect" to have "scientists set absolutely free to do whatever they like in science or in running the world." What world is he referring to? Not this one, for sure.

Estling states, "Ask yourself if you really would want them (your typical scientific experts) in charge of things." Of course not, but definitely would like to see them in charge of scientific things, where their expertise lies, as I know Estling believes. If only our leaders would listen more intently to them instead of relying on faith (the religious kind) and acting primarily for political advantage.

Speak up, scientists, about global warming and climate change and toxins and looming natural disasters and the decline of our health and the destruction of our planet. We need to

hear your loud voices more than ever before.

Craig Gosling
Indianapolis, Indiana

Good for You, SI

Reading the latest issue of SI, I thought, "Boy, are they going to take a lot of heat for this one." I have never seen so many cogently argued essays against various policies and beliefs of the Bush administration and its supporters assembled in one place.

Then again, SI and CSICOP have a long tradition of telling people things they don't want to hear. I didn't particularly appreciate learning that there is no empirical proof of communication with the dead or even the existence of an afterlife, and it was jarring to have to disagree with my fellow feminists on the issues of recovered-memory syndrome and Satanic ritual abuse. But I kept reading and learned to love the unflinching integrity of the empirical world view espoused by this magazine. Those who may be offended by SI authors questioning certain cherished religious and political ideas should not take it personally. This is a truly fair and balanced publication where everybody's belief system gets a little bashed now and then.

Anne Sharp
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Thank you. We are fiercely pro-empiricism, independent, and nonpartisan. As Ms. Sharp implies, let the evidence fall where it may.

—Editor

Climate Change: Beware Partial Quotes

Herb Schaffler's letter in the March/April issue includes a common quote by Stephen Schneider, but it is a misleading partial quote that has been repeated numerous times.

The original discussion appeared in an October 1989 *Discover* magazine article by J. Schell, in which Schneider described the difficulties of squeezing standard scientific caveats and qualified descriptions of dangers into "soundbite journalism." Schneider's original version immediately continues with: "This 'double ethical bind' we frequently find ourselves in cannot be solved by any formula. Each of us has to decide what the right balance is between being effective and being honest. I hope that means both." In any case, the partial quote essentially inverts the sense of Schneider's original comments, as can be seen at http://rpuchalsky.home.att.net/sci_env/sch_quote.html or http://stephenschneider.stanford.edu/Publications/PDF_Papers/APS.pdf, either of which have the full discussion from the March 1996 *American Physical Society News*.

Mr. Schaffler either didn't know about the full quote or, like many others, chose only the few damning sentences. Whether one agrees with Prof. Schneider's opinions or not, selective misquoting is not only unhelpful but is much more easily caught in the Web era.

John Mashey
Porta Valley, California

Science Is for Spectators

I disagree with the last sentence in Gary Barker's letter on "Science and the Public Curriculum" (March/April 2005), "Science is not a spectator sport." For some of us who do not "do science," it is indeed a spectator sport. We do not work in the sciences, but we have to be interested in them if we are to survive, and we try to keep up with what is happening. If it weren't a spectator sport, I would stop subscribing to *Scientific American*, *National Geographic*, *Natural History*, *Discover*, and especially SKEPTICAL INQUIRER, since it's my "score card," and I can't tell the players without one. It helps me tell the real players from the ones on steroids.

Charles F. Hruska
Brooklyn, New York

Recollections of MacArthur

I'm sure you've had many more letters about MacArthur's return to Leyte than you can publish (Letters, March/April 2005), but I've decided to send you yet one more. My late father, William D. Gordon, served in the 34th Infantry Regiment, 24th Division, from 1943 to 1946 and was thus involved in the Philippine Campaign. As for what is germane to the subject of General MacArthur's return to Leyte, I shall let my father speak for himself, with characteristic self-deprecating humor, from a letter he wrote to me in September 1978:

> "On 20 October 1944, I met Gen. Douglas MacArthur and got my picture on the cover of *Life* magazine. It was kind of a sentimental moment for him, and I didn't want to upstage him, and my uniform was all dirty anyhow, so I kind of stepped back, when the photographer started snapping pictures. . . . We were returning to the Philippines. (There were several thousand of us who'd never been there, in the first place, and most of us would never have promised to come back, but that's beside the point; MacArthur was a general.)
>
> "*. . . in 1969*, when Leyte celebrated the 25th anniversary of MacArthur's 'return,' there was a big argument about where he actually came ashore. Vince Syndiongco—who was only 20 at the time and was my interpreter—knew that I'd been beach control officer, and that I had personally greeted the general and told him to get his head down before he got it shot off (which he didn't do, but he remembered me and my name, months later) (we were under very heavy fire at the time, and he sure didn't stay long) (most of the published pictures of him wading ashore were staged, two miles north of us, later in the day, in far greater safety). . . . Anyhow, I have the honor to be the one who made the decision, for the Philippine government, as to where the Monument commemorating the event now stands. . . ."

It seems that any and all stories about what "really" happened on the beach in Leyte have both their adherents and detractors. I thought, however, that the recollections of somebody who was there and who no longer has anything to prove might be of as much interest to your other readers as it has been to me.

T.J. Gordon
tjgordon1@comcast.net

Ralph Estling responds:

Mr. Gordon's father says that MacArthur came ashore twice on Leyte and it was his second arrival that resulted in most photographic evidence of his return but that this was due more to considerations of safety than dramaturgy. Perhaps so. Eyewitness accounts are often valuable, if only as counterbalances to other eyewitness accounts.

The letters column is a forum for views on matters raised in previous issues. **Letters should be no more than 225 words.** Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail (send as e-mail text, not as an attachment) to letters@csicop.org (include name and address).

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The organizations listed above have aims similar to those of CSICOP but are independent and autonomous. Representatives of these organizations cannot speak on *behalf of the CSICOP.* Please send updates to Barry Karr, P.O. Box 703 Amherst NY 14226-0703.

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THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

Orion Nebula: Planetary Protection: X-ray Super-Flares Aid Formation of "Solar Systems"

This Chandra X-ray Observatory image shows the Orion Nebula Cluster, a rich cluster of young stars observed almost continuously for 13 days. The long observation enabled scientists to study the X-ray behavior of young Sun-like stars with ages between 1 and 10 million years. They discovered that these young stars produce violent X-ray outbursts, or flares, that are much more frequent and energetic than anything seen today from our 4.6 billion-year-old Sun. Distance estimate: About 1,500 light years. NASA/CXC/Penn State/E. Feigelson & K.Getman et al.

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